Decentralization of Visual Resource Management

DECENTRALIZATION OF VISUAL RESOURCE MANAGEMENT ON THE KOOTENAI NATIONAL FOREST

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PROFESSIONAL DEVELOPMENT PROGRAM
FOR OUTDOOR RECREATION MANAGEMENT

Clemson University: September 1984

ABSTRACT

TITLE: Decentralization of Visual Resource Management on the Kootenai National Forest

BACKGROUND: Federal laws and policies direct the Forest Service to analyze the effect of management activities on the visual resource. Projects of a particularly sensitive nature require the skills and experience of a landscape architect. When visual significance and processes are not clearly understood, the potential for inadvertent illegalities and visual mismanagement to occur increases proportionately. The problem is magnified by lack of time and availability of those visual resource specialists.

Diminishing budgets and personnel ceilings affect all resources. This effect is particularly felt in fields such as landscape architecture/visual resource management where few professionals have traditionally been hired. Currently, there are less landscape architects available to provide visual guidance to district projects. In some cases, the landscape architect(s) at the Supervisor's Office have been given additional responsibilities, further reducing their availability. Other forests are attempting to meet district visual resource management needs by temporary appointments or details without retaining a full-time professional.

PROBLEM STATEMENT: The Kootenai National Forest now employs one landscape architect to deal with visual resource management on a half-time basis. This is a reduction of 1/2 a person/year. Consequently, the districts must bear a greater responsibility in the coordination and implementation of visual resource concerns. The problem then is: how can the districts, suffering under the same budget/personnel reductions best meet visual resource management (VRM) requirements?

This paper will serve as a guide, discussing; minimum legal requirements concerning VRM, incorporation of VRM into project level work, and training needs. Techniques of visual resource management decentralization and both the positive and negative aspects of such a transistion will be overviewed.

DISCLAIMER: This paper was prepared as a student project in partial fulfillment of the requirements of the Professional Development for Outdoor Recreation Management Program at Clemson University. The opinions expressed in this paper are those of the author and do not necessarily represent those of the Kootenai National Forest, the U.S. Forest Service not the Department of Parks, Recreation and Tourism Management of Clemson University.

TABLE OF CONTENTS

CHAPTER ONE: INTRODUCTION

Visual resource management is a relative newcomer to the wide variety of resources managed by the United States Forest Service. Active application of landscape design principles began in the late sixties. By the mid-seventies, the framework for the formal visual resouce management (VRM) system had been constructed. Acceptance and integration of the program into Forest Service operations has been fraught with growing pains but has evolved into a positive learning experience for all involved.

References to VRM as related to timber management activities will be found throughout this paper. This is because the district VRM workload on the Kootenai National Forest is primarily timber oriented. Regardless of the primary management emphasis of a given forest, the principles and concepts herein are applicable. With the readers forebearance, timber management will be used in most examples and discussions.

The gains of the past ten years are evident in the typical forest landscape. Timber harvest activities have come out of the backcountry and into the backyards of the people who work and play in the National Forests. The new timber sale designs reflect a sensitivity to the land and the persons viewing them that was not evidenced in the past. A sense of social responsibility has joined ranks with sound resource management policies. The compatibility of VRM with the management of other non-timber resources has helped in the acceptance of the sometimes more costly, yet more aesthetically pleasing layouts.

Traditionally, the responsibility to implement the VRM program has been relegated to landscape architects. Design skills coupled with training in human behavioral response to environment gives these professionals the basis to manage such a program. The challenge to integrate these qualities into natural resource management has met with varying degrees of success. Much is dependent upon the actual forest; the resource base, the established practices, and the value structures and the personalities of the people involved. Many of these factors are dynamic.

Most forests with large timber volumes have only one or two landscape architects serving the entire forest. Since landscape architects are typically also responsible for recreation management, their time is divided between that and VRM. In recent years, budget increases have fallen behind inflation. Sweeping personnel reductions along with less money have introduced many new ways of doing business. Part of the new way involves delegation of greater responsibilities to districts to handle almost all aspects of their timber workload. This includes making do with less input from specialists such as landscape architects. This shift allows for the reduction of positions in the Supervisor's Office, i.e. specialists.

Such is the current situation on the Kootenai National Forest. Two landscape architect positions have been combined into one. The workload in VRM over the past five years has been more than sufficient to keep one person and an assistant busy throughout the year. Likewise, the recreation workload requirements exceed regional time estimates for a person-year.
One position was eliminated through workforce management cutbacks. The remaining landscape architect must now handle both programs, focusing on the projects highest in sensitivity and priority.

As indicated above, the VRM program requires more specialized training than does training in recreation management. Many foresters have had course work and some actual experience in forest recreation management. All districts on the Kootenai have a staff officer with recreation responsibility. Therefore, the increased workload in recreation management is much more easily absorbed by the existing workforce. The problem is then, how can districts faced with their own reductions in budget and personnel most effectively take over many of the non-critical tasks in VRM?

The answer lies in training and experience, as well as the support and direction of the line officer. Visual resouce management is not a mysterious, subjective past time whose proponents have spent years in secret initiations. Basic design concepts applied to natural resource management techniques and practices form the basis of this "scientific art." There are no barriers to learning the fundamental concepts of VRM to anyone who has the interest and desire. The innate ability to actually see is meted out more sparingly. That ability helps in applying the principles of VRM but even those without can learn to be observant and apply those same principles.

The thrust of this paper is to explore ways in which the VRM task can be accomplished at the district level. The district manager needs to know how much must be done to satisfy legal requirements, what training and resource material is available, how the job can be done most efficiently with the highest quality results and, who is in the best position to coordinate and implement visual resource management on their district. Continuity over time is also a consideration. The answer may vary from district.

This paper will be useful to Forest program managers with a responsibilty in timber, recreation, and VRM. Particular chapters will be of special value to persons actually responsible for implementing VRM at the project level. For example, Chapter 3: Processes summarizes the process of visual resource integration from the sale position statement to monitoring and rehabilitation. It is assumed the readers have; a.) a basic understanding of VRM, b.) some knowledge of timber harvest activities and processes, and c.) familiarity with natural resource management.

The Kootenai National Forest in northwestern Montana is the sample forest in this discussion. The Forest is comprised of seven districts with a relatively even timber workload. Typically, direct timber support has required 75%-80% of the VRM specialist's work year. Therefore the scope of this research is oriented toward the applicability of VRM to timber management.

Much of the study was conducted by researching laws, regulations and current literature relating to visual management. The extractions and condensations are the creation of the author. Budgetary studies did not prove fruitful as the monies actually spent in VRM are not broken out as a line item in the U.S. Forest Service system: they are within the recreation budget. A service-wide study is exploring the option of making this a separate line item. A further discussion of this issue is found in Chapter 5: Analysis.

Visual resource management techniques were derived primarily from U.S. Forest Service publications and the author's 8 years experience in the field.

CHAPTER 2: THE LEGAL REQUIREMENTS OF VISUAL RESOURCE MANAGEMENT

"I Know What I Want to Do, But What Do I Have to Do?"

A survey of the principle laws and regulations that relate to the United States Forest Service (USFS) is the logical place to begin. Current landscape management literature cites only recent regulations that explicitly relate to visual resource management. In actuality, many references are made throughout the legislative history of the Forest Service to the improvement and the protection of the "resources." Those forest resources were initially defined as only timber and water (Forest Administration Act of 1897 or Organic Act). The text of that act implies that resources were thought of primarily in terms of availability for physical utililization. It wasn't until 1969 in the National Environmental Policy Act (NEPA) that visual quality was specifically included in the list of renewable resources of all public lands.

BACKGROUND

At the time of the Organic Act, the public forest lands were known as Forest Reserves. In the ensuing decade before the Reserves were renamed National Forests, some awareness of the social benefits provided by forests in terms of recreation is indicated by several regulations which stipulated that the public was permitted and indeed, entitled to use the forests for recreational pursuits. By 1910, National Forests were recognized as the leading recreation resource available to the American public and use was increasing at an annual rate of 10%. (Costley) The automobile gave tremendous access to the forests. Automobile touring, i.e. sightseeing, brought the people and they were looking at the National Forests.

The first landscape architect, Art Carhart, was hired in 1919. Contrary to popular opinion, this first "recreation engineer's" assignment was to design the landscape, not recreation facilities. Meanwhile, recreation overuse and its impact on forest resources brought attention to the need for budgeting dollars specifically for recreation: $10,000 in 1920!

Although broad national legislation for visual quality was not seen until 1969, an act for site-specific aesthetic protection was written in 1930. The Shipstead-Newton-Nolan Act was enacted to protect the scenic values on the Superior National Forest by constraining timber management decisions. (Costley) Recreation development reached its heyday during the 1930's. The influence of increased social sensitivity on the part of government and the release from the burdens of the Great Depression brought out recreators by the score. Natural materials and an abundance of cheap labor accounted for great strides forward in developed site construction. Employees such as Bob Marshall brought the nation's attention to the value of the land itself: its vastness and abundant beauty. Unexpectedly, the advent of World War II caused a sudden suspension in the ever-increasing National Forest recreation use.

Following the war, the policy makers realized that recreation use could quickly get out of hand without some sort of aggressive plan to meet demands. Mission 66 (National Park Service), Operation Outdoors and the Outdoor Recreation Resources Review Commission (USFS) were just a few of the many actions taken in

the 50's to provide some reliable direction for recreation management on public lands. They were all good in concept but the hedonistic leanings of post-war America were misjudged. All projected use estimates were low, some were off by as much as 60%.

MODERN LEGISLATION

The Multiple Use-Sustained Yield Act of 1960 is considered the basic modern statutory guide of the U.S. Forest Service. (Shands and Healy) The Act focused on five specific resources: range, timber, water, wildlife and fish, and outdoor recreation. To avoid excessive restrictions and potentials for litigation, the act was quite broad in scope. Protection of the visual resource could be construed to exist under the category of outdoor recreation. However, more important was the Act's overall concept that highest economic value is not the objective of "harmonious and coordinated management of the various resources." (Multiple Use-Sustained Yield Act)

Legislation during the 1960's included some acts that did specifically address the visual resource but the application was limited to the lands surrounding particular sites or recreation features. The National Trail System Act of 1968 directed the designation of special trails having high historic, scenic or recreation value. Likewise, the Wild and Scenic Rivers Act of 1968 called for designation of rivers having outstanding qualities (either wild, scenic, or recreational). Direction to protect aesthetics and scenic features is explicit. "Particular attention shall be given to scheduled timber harvesting, road construction, and similar activities which might be contrary to the purposes of this act." (Wild and Scenic Rivers Act)

The general forest lands were still lacking specific direction for the protection of the visual quality. The Monogahela-Bitterroot controversy brought the matter to a head. The Secretary of Agriculture, Earl Butz, was sued by the Issac Walton League, based on the Organic Act, over the timber harvesting methods in use at the time. Impacts to soil and to the visual quality were cited as the motivation behind the suit. An initial decision in favor of the plaintiff was given in 1973 and upheld in 1975. The Chief of the Forest Service suspended all timber sales in the jurisdictional area of the Circuit Court of Appeals (West Virginia, Virginia, North Carolina, South Carolina). The language against clearcutting in that appeal was used to stop a large sale on the Tongass National Forest in Alaska later that same year. (Conover)

THE TURNING POINT

In the meantime the ground swell of public opinion against the practices of the Forest Service, particularly clearcutting, had reached Capitol Hill. In response, the National Environmental Policy Act was enacted in 1969. Its implications are far-reaching. Its purpose, simply stated, is "to declare a national policy which will encourage productive harmony between man and his environment." (NEPA) The level of detail required for documentation of the coordination and the consideration of all resources is unprecedented. The Act speaks directly to the visual resource, the first one to do so: the direction is to improve and coordinate Federal plans, functions, programs and resources to assure aesthetically and culturally pleasing surroundings. Furthermore, all unquantifiable environmental amenities must be given equal and appropriate consideration along with other economically and technically quantifiable resources.

NEPA requires "a systematic interdisciplinary approach which will ensure an integrated use of the natural and social sciences and the environmental design arts in planning and decision making for action which may have an impact on the human environment." (NEPA, Chapter 11) Application to the present day U.S.Forest Service is most felt in the requirement for Environmental Assessments (EA's) to be written for every activity that may affect the environment. The EA data are normally gathered by an interdisciplinary team (IDT). For simple actions, a qualified person can write the EA independent of an IDT. (NEPA, Chapter 10) Categorical exclusions, for routine activities, may be used in place of a written EA. However, neither a categorical exclusion nor a single author EA precludes the use of the IDT approach to data gathering. (Forest Service Manual (FSM) 1951.2) These environmental documents "must be concise, written in plain language, and address the issues pertinent to the decision being made." (FSM 1950.3)

The Environmental Impact Statement (EIS), another offshoot of NEPA, is required when projects create or have the potential to bring about significant impact on the human environment. As opposed to an EA, this document must present the worst case scenario and be reviewed by the independent Council on Environmental Quality. The Finding of No Significant Impact statement is an instrument accompanying every EA, signed by the responsible official. That statement indicates that the impacts are of a minor nature and an EIS is not necessary.

The criteria used to evaluate the proposed project are critical and should reflect the most important resource issues and concerns of the public. (NEPA, Chapter 12.2) Visual sensitivity maps indicate the level of public concern for the landscape. These ratings are reflected in the Forest Plan. If a request for public response to a specific project does not raise a mention of concern for the visual resource it should not be assumed that that concern does not exist.

Data gathering must always be documented either formally in the EA or in a well organized project folder. Such visual data can be found in a number of existing plans and maps. However, also reviewing the project in the field is a necessity due to the nature of the resource. Interpretation of the data should provide an understanding of current and expected future conditions. (NEPA, Chapter 12.4) Appendix B outlines in more detail sources of information and gives examples of how that data may be interpreted.

Alternatives are the crux of the EA. A reasonable range of alternatives must be developed to provide different ways to address the significant issues, objectives, concerns and opportunities. "Objectives...from higher order Forest Service plans, programs and policies guide but do not limit the range of alternatives." (NEPA, Chapter 12.5) An alternative that meets the visual quality objectives, where physically possible, therefore needs to be displayed. Mitigation and monitoring requirements for all affected resources must accompany each alternative.

The "No Action" alternative is a must: it may mean no change from current management direction or simply no project. This alternative serves as an important benchmark from which to measure change. "Care should be taken to ensure that the range of alternatives does not prematurely foreclose options which might protect, restore and enhance the environment." (NEPA, Chapter 12.5) This means that the "No Action" alternative may not necessarily meet the visual quality objectives, particularly where there is an opportunity for visual rehabilitation.

Comparing each alternative can be difficult when priceable commodities are being compared with nonmarket ammenities. Consensus of the IDT in assigning weighted values to each evaluation criterion is a common approach. A value analysis method developed by Schaffer and Davis is displayed in Appendix C. Estimating the effects of each alternative must be expressed in terms of change in the human environment. Those effects could be direct, indirect and/or cumulative. (NEPA, Chapter 12.6) A direct visual effect could be a contrast to the natural appearing landscape in terms of form, line, color texture or a combination thereof. An indirect effect may be a drop in property values on adjacent private lands. A cumulative effect would be an overall change in the visual quality and a change in recreation patterns due to the repeated harvesting in a drainage.

Further detail on the processes involved in the development of an EA may be found in FSM 1950. Specific examples of visual input into the EA document can be found in Appendix B.

The Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA) provides the process for determining management objectives through comprehensive forest plans. The interdisciplinary approach and coordination first mentioned in NEPA is reinforced in this act. RPA speaks directly to timber harvest activities on a number of occassions. A sale may be advertised only after the "interdisciplinary review has been completed and the potential environmental, biological, aesthetic, engineering, and economic impacts...have been assessed." (Sec. 6.g.F.i) That same section says that harvesting systems should not be selected primarily because they will give the greatest dollar return or greatest unit output of timber. Furthermore, "cut blocks, patches or strips are to be shaped and blended to the extent practicable with the natural terrain." (Sec. 6.g.F.iii) Planning for corrective actions, such as visual rehabilitation is encouraged. A heavy emphasis is placed on the monitoring of management activities in RPA.

The Federal Land Policy and Management Act of 1976 makes several sweeping statements on multiple use; resources should be managed in a combination that will best meet the present and future needs of the American people, while emphasizing balance and diversity including natural scenic values and outdoor recreation. Special management actions are recommended to protect and prevent irreparable damage to important historical, cultural and scenic values. (Sec. 102.8) This policy is considered an update of the Organic Act of 1897. (Williams)

Second to the National Environmental Policy Act, the piece of legislation that most significantly affects the day-to-day operations of the Forest Service is the National Forest Management Act of 1976 (NFMA). This act was designed to deal with the impasse over timber harvesting that came about as a result of the Monogahela-Bitterroot controversy. It ammends the provisions of RPA by adding direction for the content of RPA plans to ensure equal consideration for, and the protection of all forest resources. "Timber is not to be favored over other resources." (NFMA) Much of the rhetoric of RPA is repeated in the NFMA regarding harvesting systems, regeneration cutting and the impacts of roads.

The interdisciplinary approach is underlined again in this act. Market and nonmarket items must be considered in the analysis of effects. NFMA clearly specifies monitoring needs; a comparison of costs and levels of actual activity versus that which was estimated via a methodology prescribed prior to project implementation.

Direction for inventorying and evaluating the visual resource and the public's visual expectations is a part of the NFMA. Although, the methodology for both had been previously defined in one of the USDA handbook series on VRM (Volume 2, Chapter 1) in 1974. Of more importance recently is the mandate that "management prescriptions for definitive land areas of the forest shall include visual quality objectives." (NFMA) Compliance is demonstrated in the draft Integrated Forest Plan for the Kootenai National Forest.

Furthermore, the section on vegetative manipulation gives latitude to a) not restock areas where permanant openings are created for vistas or recreation use, b) protect the visual resource when using even-age management, c) set cutting unit size and dispersion of openings in regional guidelines. That dispersion factor is dependent upon several elements including visual aborption capability. Even-age managment and type conversion projects are directed to analyze the effects in terms of environmental design and its relationship to the the process of natural change. (NFMA, Sec. 219.27d)

The most recent relevant legislation is a reinterpretation of the Knutson-Vandenberg Fund Act of 1930. The Act was redefined to conform to the National Forest Management Act of 1976. The original act provided that certain amounts of dollars from timber sales could be specifically earmarked for projects related to regeneration and timber stand improvement. These projects must be within the sale area boundary. The revision allows for collection of such funds to mitigate impacts to wildlife, visual quality and recreation.

This has proved to be an important and necessary source of funding for non-timber resources, allowing corrective actions to occur without seriously depleting regular program management budgets. Specific direction can be found in Forest Service Manual 2310, Recreation Planning.

SUMMARY

Direction regarding management of the visual resource has become increasingly more abundant and specific over the years. Public sentiment has done much to spur the legislative bodies. However, where visual input can be adequately provided by a trained paraprofessional, a landscape architect's involvement is not a requirement. The foregoing legislation does make it clear that the visual resource is not to be relegated to the "nice to do" category. Visual resource management is a vital and integral part of forest management in the U.S. Forest Service.

CHAPTER THREE: PROCESSES

"Now That I Know What Has to be Done, How Does it Get Done?"

This chapter is designed to cover the more significant activities of visual resource management (VRM). The primary task (typically 75% to 80% of total time) of the VRM specialist on the Kootenai National Forest is in timber support. Therefore, timber support activities are used as an example. However, the same activities relate to other types of resource projects. Each function is described in some detail and where appropriate, examples are given. The last section is a simplified trouble-shooting guide to stimulate ideas for the mitigation of specific problems.

OVERVIEW

Visual resource management in its less complex forms does not require a professional landscape architect. The process of evaluating the impacts of a particular problem requires simply common sense and some training in standard design principles. The application of those standards could be considered almost "cookbook" with the understanding that situations of natural resource management are seldom identical.

The task of VRM at a project level begins with an assessment of the existing visual situation. Data assembled at the planning level can be used to give an overview and identify particular concerns. Ground reconnaisance, primarily in the form of seen area mapping adds necessary detail to the existing data. Refinement of the visual quality objectives (VQO) set out in the Integrated Forest Plan is then possible. The task of recording the information in the Environmental Assessment (EA) follows. The project design alternatives may be completed before or after the EA is completed. Analysis of the final layout may be done in concert with, or in addition to the EA, but always within the parameters of the project objectives and evaluation criteria. Mitigation measures are identified at this point and incorporated into the project design, and where necessary, the timber contract.

The VRM job does not stop there. Monitoring the results of activities has rarely received the attention it deserves in the Forest Service. However, the importance of that function is being realized. When monitoring does identify a visual problem area or opportunity, rehabilitation and enhancement techniques can implemented to improve the situation.

Each of the underlined functions in the preceeding two paragraphs is expanded upon under its own subtitle in the following pages.

PLANNING LEVEL DATA

Many visual resource data have been generated over the past ten years. Some of that information does not change noteably over time. Other data are dynamic over time with the changing forest landscape.

The Variety Class of the forest has been mapped. Since that information focuses on the natural physical elements of the landscape, barring castrophes, the ratings will not change over time.

The Variety Class identifies the attractiveness of the landscape based upon the inherent variety in terms of landform, waterform, rockform and vegetation. Research suggests that the greater the variety the more attractive the landscape (USDA Ag. Handbook #462). There are three classifications; Unique (A), Distinctive (B), and Common (C). The criteria for each of those classes relate directly to the geophysical province in which the forest is located. Refinements in those criteria have been made to attune more closely with conditions on the Kootenai National Forest. Appendix D contains the chart used to determine Variety Class on the Forest.

This rating is most useful in the position statement phase. Primarily, if a landscape is rated A, it will deserve special attention. A landscape with a rating of C will allow for more manipulation and may actually be enhanced by timber harvest activities. Variety Class is one of the three elements in the determination of VQO's at the planning level.

Sensitivity Level mapping is a dynamic process. The sensitivity level rating reflects the amount of traffic on particular roads and trails and the amount of visitors to a particular use area. In addition, the level of concern of those persons is estimated based on the primary function of the area or travelway. Sensitivity level ratings have been established by interdisciplinary teams and the landscape architect at each district, using traffic counts, site surveys and personal knowledge. It is the responsibility of the forest landscape architect to coordinate updates at five year intervals. This does not preclude periodic updates when the need arises.

Sensitivity levels are used at both the planning and project levels. They were used in prescribing the VQO of each management area in the Integrated Forest Plan. In making the final VQO determination at the project level, the sensitivity level is indispensible. The section on VQO determination and Appendix E will provide more details.

Existing Visual Condition can be an important baseline reference for monitoring purposes. The only Existing Visual Condition mapping for the Kootenai was done on the planning level by viewsheds using aerial photo survey. Therefore, the information is most useful at the position statement and Forest-level monitoring phases. The rating system correlates with the five levels of Visual Quality Objectives. A verbal description of the existing visual condition is a necessary part of an Environmental Assessment. A sample description can be found in Appendix B.

Visual Absorption Capability has been done by a computerized method for the Forest Plan. The data generated is not useful for project level work but may be of some application in the position statement phase. Accurate Visual Absorption Capability (VAC) mapping for project level work requires field reconnaisance, office data survey, and use of weighted value matrix.

The Kootenai National Forest VAC system relies on information from a) the timber type Photo Interpretation maps, b) slope maps, c) vegetative recovery rates, and d) sensitivity level mapping. The recently published Lands System Inventory is a detailed Forest survey defining landtypes by slope soil and geology. It includes corollary resource implications for each landtype. Both recreation use potential and visual absorption capability are discussed and rated. (See Appendix F)

Usually VAC is done by the forest landscape architect due to the time and skill level required. VAC can have many gray areas therefore keen judgement is often necessary.

Visual Quality Objectives (VQO) are prescribed in the Integrated Forest Plan. Each management area has a specific VQO or a range of VQO's dependent upon the visual significance. (See Appendix G) Many management allocations specify a range of VQO's to allow for meeting other resource needs while striving for high visual quality on only those acres which are visually significant. This is a very effective method of assigning the most appropriate VQO, however, it places the burden of responsibility for determinination squarely with the timber sale planner if a landscape architect is not involved.

For position statement data gathering, the VQO's for management areas that allow for a range can be determined by using viewing significance map overlays. These were developed for the Forest Land Use Plan, forerunner to the Integrated Forest Plan. The accuracy is not sufficient for project level work. Viewing is so dependent upon the actual setting that the true VQO's can only be established by field survey, i.e. seen area mapping, as explained in the following section.

Visual Management Classes are a combination of VQO and VAC. This rating gives a value to the relative ease of achieving a particular visual objective. For instance, a VQO of modification on a landscape with a low visual absorption capability can be more difficult to achieve than a VQO of retention on a landscape with a high visual absorption capability. Visual Management Class is used primarily in complex, sensitive project situations or as a planning tool. An explanation of the classes and an example of how those ratings may be used are found in Appendix K.

After the position statement is prepared or preliminary data assessed, the para-professional should review the needs of the project and, with input from the line officer, determine if professional assistance is required. The following outlines the procedure for basic visual resource management in timber support, and is applicable to professionals and paraprofessionals alike.

SEEN AREA MAPPING

Seen area mapping is simply a process of encircling on a map the portions of the landscape that are visible from a given viewpoint. Prior experience with topographic map interpretation is essential. Necessary equipment includes:

a. A clear, 4"= 1 mile **topographic map** that covers the sale area and all potential viewpoints. Allow a sizeable margin to help identify adjacent prominent landforms. Aerial photos and orthographic quads that show existing roads and cutting units can be helpful as well.

b. A set of erasable **colored pencils.** Visible portions of the landscape are color-coded to the viewpoint. This is important for determining viewing distance.

c. A **camera.** Photos taken at each viewpoint are critical. They provide an invaluable tool for site specific design at a later date. Those pictures also serve as the first step in the monitoring process--the "before" photo. Using a wider angle lens (28mm to 35mm)

will produce a sweeping panorama but minimize detail. A 50mm or normal lens will make the landscape appear to be further away than it actually is, with some loss of detail. Ideal is the the 75mm to 80mm lens which most closely matches the view angle of the human eye when focused on a landscape feature. However, these smaller angle lenses will require more shots to be taken. Greater than 100mm telephoto lenses are good for detail but do not suit the purpose of seen area mapping.

When panoramas are required, remember to hold the camera level, pivot with feet in the same place and do not lower the camera between shots. Allow sufficient overlap in each photo.

Slides are less expensive than photographs and can be projected on to easel paper for sketching design ideas or be superimposed over computer generated perspective plots. Clear plastic slide-holder sheets (8 1/2 x 11) allow slides to be stored in the project folder.

d. **Binoculars** are helpful for discerning particular features on hazy days.

e. A **compass** is a good tool for orientation in dissected landscapes.

Prior to leaving the office, identify the Sensitivity Levels of all roads, trails and use areas in a 7-10 mile radius.

Cover the Sensitivity Level 1 viewpoints first. Drive or hike past the area for an overview and to identify the most significant or telling viewpoints. Map the seen area from those viewpoints using a different color for each point. Make notations as to the observer position (above, below, or level), duration of view, and existing screening. Don't be surprised at what you actually see, even the most experienced mappers can be fooled by complex landforms.

Landscapes that have steep lower slopes with rolling tops are the most difficult to map (for example, the slope breaks around Lake Koocanusa). Perspective plotting is usually essential for accurate sale design analysis in these landscapes.

VISUAL QUALITY OBJECTIVE DETERMINATION

Using the seen area map generated in the field, beginning with the most sensitive viewpoint, measure the distance from that point to the seen area(s). Delineate foreground (fg = 1/4 to 1/2 mile), middleground (mg = 1/2 to 3-5 miles) and background (bg = mg to 10 miles). Distances are defined as a range so they can be adjusted to logical topographic breaks. In the places where a feature is seen from several viewpoints, the most senstitive takes precedence. The distance zone is followed by the sensitivity level identifier, i.e. fg1, bg2, etc..

Create an overlay with the management areas from the Integrated Forest Plan outlined. Those areas with a range of VQO's allowed (usually partial retention to maximum modification) must be broken into the appropriate VQO, dependent upon visual significance. The Plan states where the significance is high (fg1, fg2, mg1) the VQO is partial retention, where moderate (mg2, bg1) modification, and where the significance is low (bg2, seldom seen) maximum modification.

The management areas that specify a single VQO should now be checked. Frequently there are inclusions of unseen areas in partial retention areas. Conversely, portions of highly visible land may be found in maximum modification areas. Usually these apparent anomalies were too small to be significant at the planning level. It is critical to remember that the Plan provides guidance only. These anomalies should be identified and adjusted to reflect the on-the-ground situation. Documenting changes in allocations can be done in the environmental assessment. It is more important to record the upward VQO changes than the downward.

A summary of the visual quality objective determination process can be found in Appendix E.

Visual absorption capability rating is a complex process that the paraprofessional would likely not have the time to perform. However, certain situations which affect capability can be referred to in the EA to better describe the existing visual condition and expected impacts. (See Appendix F).

VISUAL RESOURCE ANALYSIS IN THE ENVIRONMENTAL ASSESSMENT

A complete discussion of visual resource analysis in each phase of the Environmental Assessment is located in Appendix B. That information was written and compiled by the author in 1983 as a tool for persons developing an EA with or without the assistance of a landscape architect. Samples are provided where necessary along with a copy of the National Environmental Protection Act specifications for the preparation of an EA. The Appendix can be extracted for a handy reference by EA authors.

Some additional factors to consider in the discussion of the visual situation are:

a. Physical - uniqueness, viewing conditions, proximity of wilderness or other special attractions such as National Recreation Trails, recreation oriented roads, scenic turnouts/vista points, or recreation sites (developed or dispersed).

b. Biological - vegetative diversity, opportunities to view wildlife, or the presence of waterforms, or seasonally attractive vegetation.

c. Social - popular local recreation/leisure pursuits, basic community values and special concerns.

In the past a weighted rating system was used in matrix form to select alternatives in an EA. The weighting was often swayed by personal opinions and attitudes and frequently reflected the views of the stronger personalities on the team or the resource that was best represented in terms of sheer numbers. After several years of use, such a rating system was readily understood and could be easily manipulated to highlight any alternative over another. For these reasons, the system has been largely disbanded. Replacing it are succinct verbal descriptions of the differences between alternatives and a clear rationale for the selection of one over another.

It is important to keep records on where visual analyses for EA's have been completed on each district. A small scale map with areas circled and referenced by number to a particular EA will be very useful by preventing duplication of work over time. Those records can be readily referenced in a later EA or categorical exclusion.

TIMBER SALE DESIGN ANALYSIS

Perhaps the most difficult area for the paraprofessional landscape architect is the timber sale design analysis. Indeed this is a difficult subject for persons with little design background or those who lack a "feel" for translating graphic designs into three dimensions. Training and experience are the best methods for overcoming these difficulties.

A timber sale layout must be designed so that units are distributed over space and time. A minimum of two entries should be planned at once. Primary elements to address are pattern and scale in the most visually significant portions of the sale. What natural or manmade vegetative patterns exist, how large are the openings or textural groupings and how obvious are they? Answers to these questions will form a basis for the conceptual design along with timber stand priorities.

The elements of form, line, color and texture cannot be underrated. They are the elements of design that can cause a project to succeed or fail. (USDA Handbook #434) The objective is to emmulate naturally occurring phenomenon in each of these elements. By this method, contrasts are eliminated. Contrasts are the clashing of natural and unnatural elements that attract the eye of the observer. The intention of visual resource management is to present a landscape that, to the casual, untrained observer appears to be natural. That indeed is the expectation regarding National Forests of the general public. (USDA Handbook #462)

Computer generated perspective plotting of proposed sale design is a very efficient way to translate two dimension design into three dimensions. The Kootenai National Forest has a Tektronix 4052 with the appropriate peripheral equipment and software to produce working drawings of an average size sale area in the space of a day. Training in its use is available along with a step-by-step user's guide. (Gross, 1983) Once the base data is entered, many alternatives can be portrayed and examined from any number of viewpoints. For more complicated sales that require refined displays, a Hewlett-Packard 9000 is available at the Regional Office in Missoula.

Another method of analysis breaks the sale area into logical subdivisions based on the seen area from major viewpoints, topographically defined. Compare each subunit by alternative. In which alternative are the VQO's for that subunit most readily met? (USDA Handbook #462) In some cases, an alternative can be constructed that incorporates the best of each subunit design. Alternatives can be also be ranked by the percentage of affected acres of each that do not meet the sale area VQO's. The number of levels that the achieved VQO differs from the prescribed VQO's must also be considered.

There is no standard unit or sale design that will always meet the VQO's. General guidance for unit distribution and the shape of cutting units is found in the NFMA regulations, Section 219.27d: units should relate to topography and other natural and artificial openings, and be analyzed based upon the proximity of units to each other and the degree to which the units are shaped and blended to the natural terrain (to the extent practicable). Simply stated, the layout should be natural appearing and borrow from the basic elements and openings found in the landscape. Detailed discussions of these principles can be found in USDA Handbook #559, Visual Management System, Timber Chapter.

Through the analysis process, the cutting units that do not meet the visual objectives of the sale will become evident. Most persons have the capability of identifying the units that don't quite "look right". Determining <u>why</u> they don't look right is the most important phase of analysis. Analyze by reducing the

design to simple elements; form, line, color and texture. The contrasting elements must be identified so that they can be rectified where possible.

MITIGATION

Mitigation is the process of making impacts less severe. Mitigation efforts must be based upon compromise. Obviously if the ultimate visual solution were possible, mitigation would not be necessary. The Timber Chapter Handbook mentioned previously has details for cutting unit design and mitigation in specific timber types. The trouble shooting guide that follows is useful for generating ideas on how to deal with particular problems, identified by the basic elements of landscape design. To use it effectively, the most significant problems noted in a design should be addressed first. Often, solving them first will automatically solve other related problems.

ELEMENT	PROBLEM	POSSIBLE SOLUTION
Scale	Too large	-Move unit to take advantage of partial vegetative or landform screening. -Break into two or more units. -Maximize edge effect. -Retain island of vegetation, particularly younger stands.
Line (Shape)	Obvious road line	-Add leave island(s) below road. -Cut above road also (esp. good with tractor ground above and cable below road). -Leave variable width screen below road (25-50'in midground). -Use jump-up landing below road, leave screen between. -Downhill yard instead.
	Straight edge	-Abut clearcut unit with partial cut unit. -Abut natural opening. -Mimic line of existing landform. -Undulate edge (fg - 50-100': mg - 200-300': bg - ineffective) -Feather edges (same distances as above). -Snow emphasizes line in continous cover situations. -Reminder: snow emphasizes straight lines, even in partial cuts.
	Ridgeline	-Cross horizon ridgelines at an acute angle, away from viewer, continue over ridgetop slightly. -Change prescription to overstory removal at ridge.
	Geometric shape	-Offset and stack units between roads (join units but with non-parallel edges). -Imitate shape of natural openings/fire scars. -Follow topography/contours especially on tractor ground (horizontal orientation). -Stage broadcast burn to allow shape deviations. (See Visual Management System Handbook, Fire Chapter) -Leave island at bottom. -Feather edges.
	Rock	-Highlight cliffs and rock outcrops.

Form	Dozer piles	-Pile out of immediate fg. -Whole tree skid to landing.
Color	Soil contrast	-Whole tree skid. -Screen road cuts or immediately seed. -Yard through corridors adjacent to sensitivity level one roads and trails. -Limit harvest to sites with moderate to high vegetative recovery. -Avoid soil disturbance of dozer piling by broadcast burning. -Designate skid trails.
Texture	Unnatural (slash, leave tree pattern)	-Uneven spacing of leave trees (must be significant deviation if beyond fg). -Leave hardwoods and clumps of regeneration. -Thorough slash clean-up in fg and mg. -Horse log in immediate fg. -Yard away from road/viewpoint. Whole tree skid. -Mix patch cuts with partial cut.
Pattern	Regulated	-Vary size of units and space left between. -Vary prescription. -Limit number of units seen from one viewpoint. -Increase number of entries and shorten period between. -Stack and offset units. -Change some large units ot clusters of smaller units.

*Remember to explore the possibilities of using KV funds to mitigate visual and recreation impacts due to project activities.

REHABILITATION

The techniques and principles of rehabilitation are much like those of mitigation only the impacts are on the ground not just on paper. A discussion of the benefits and techniques of rehabilitation is located in Appendix H. Intervening strip management is also discussed.

MONITORING

The future focus of VRM will be on monitoring the visual effects of a cross-section of activities. The time and organization required to implement such a program is notable. Over the long term, monitoring will be an economic asset. Attention to patterns of visual change and accurate identification of recovery periods will allow for establishing reliable resource management schedules. Cost effective mitigation measures that really work will be evident.

There are several effective ways to reach the goal of monitoring visual quality to see that it is in keeping with the Integrated Forest Plan. Several of the more common approaches are discussed below.

Photopoint monitoring is popular because of its relative simplicity; a.) identify easily locatable photo points along major travel routes or use areas, b.) develop a schedule for obtaining photos (assign responsible party), and c.) file and compare visual change over time. This method allows for delegation of some of the work, the landscape architect's time can be focused on the analysis phase. Not only is the method controllable, it is also relatively consistent over time.

The drawback of this method is that the monitoring is limited to main routes and specific viewpoints. Corrolations to the Integrated Forest Plan will necessitate maps in the file identifying the Management Allocation seen from each viewpoint. Also, it is sometimes difficult to assess the visual change in photographs, particularly if the quality and lighting of those photos vary. Perhaps the major negative point is the lack of ability to prevent visual mismanagement at the planning stage.

In its true form, monitoring must address the planning methodology as well as the end result. Photo point data collection therefore may be valuable as part of a comprehensive monitoring plan and for specific projects. However, it should not be the sole method of visual monitoring. A sample photo point monitoring plan for projects can be found in Appendix I.

Visual management efforts can be monitored by review of a statistically reliable number of individual project folders, including all environmental documents. Major projects will require additional review of contracts and related materials such as sale administrator notes. This is to assure mitigation and plan objectives are carried forward to documents controlling implementation.

Although this method requires a significant amount of a landscape architect's time, much of this work can be done in the office during the non-field season. A broad range of projects can be covered. This method provides a valuable way to assess the visual management capabilities of the district para-professionals. However, plans often change due to ground conditions or circumstances that were not known at the time of planning. Mitigation measures may not be done completely or correctly. Additionally, due to tight budgets and limited personnel, Environmental Assessments and project documentation can suffer from disorganization and attempted brevity. The key to success for this method is selection of the most visually significant projects and follow-up in the field after implementation.

An interesting concept of monitoring has been put forth by Region 8 of the U.S. Forest Service. The job is accomplished by rating projects in planning and post-activity phases via an accomplishment/acceptability rating system similar to the current personnel performance rating system. Having an orderly, consistent approach to visual monitoring is quite a benefit. A copy of that regional supplement is found in Appendix J. Some of this rating work could be done by district personnel.

When determining what method of visual monitoring to use, it is important to cover the following:

a. Full spectrum of forest activities is addressed.
b. Changes in personnel will not effect continuity.
c. Process is efficient, minimizing time and maximizing available skills.
d. Method relates directly to the Integrated Forest Plan.
e. Outputs are trackable, understandable and consistent.

A combination of the methods discussed above may produce the most beneficial results. Input to and direction from the regional level is necessary. Technically, monitoring has been a legal requirement since the National Environmental Protection Act of 1969. It is not a merely a "nice-to-do" process. Emphasis on monitoring will continue to increase and hopefully more refined methods of meeting this need will be developed.

CHAPTER FOUR: ANALYSIS

"Can Decentralization Really Work?"

The decentralization of visual resource management (VRM) responsibilities on the Kootenai National Forest did not occur within a short timeframe. The process has been an evolution to a new way of doing business rather than an intrinsic restructuring of district and specialist duties. The landscape architect specialist at the Supervisor's Office retains responsibilty for the more sensitive projects, for coordination with outside agencies and for multi-district projects. Meanwhile, involvement in visual management for timber sale support has been shifting to the district paraprofessionals just in time. Workforce reductions have brought about a sudden unexpected decrease in available visual specialist time from approximately 200 person-days to less than 100 person-days per year.

The beginnings of a timber support overload in visual resource management were recognized on the Kootenai as early as 1981. Comparisons of job requests versus time available revealed as much as 32% overprogramming in some years. The staff officer in charge of Lands, Minerals and Recreation (including VRM) with regional support requested from members of the management team voluntary compliance to the concept of appointing a district coordinator to handle routine visual input to timber sales. The request was repeated via annual memos and reinforced at meetings pertaining to visual management. Training for district personnel in various aspects of VRM was conducted with this objective in mind.

Initial district response to the coordinator role was apprehension at the thought of increasing workloads while eliminating positions; a valid concern. Uncertainty about the level of success and amount of time required further clouded the issue. Despite these concerns compliance began on an informal basis. Much of the credit for the implementation of district level VRM goes not only to the unit managers but to certain individuals who, because of a personal interest in VRM, worked to maintain their targeted outputs while including VRM in their day-to-day work. That informal network grew over the ensuing years to include all districts.

As a part of data gathering for this paper, a memo was sent to each Ranger District requesting that the person(s) responsible for routine visual resource management be identified. Other questions asked included: a.) identification of the job series and grade of these coordinator(s), b.) the level of training expected, c.) the amount of time spent per year in VRM, and d.) the managers' level of comfort with the concept of decentralization. The following chart displays those responses.

DISTRICT	COORDINATOR'S POSITION*	SERIES/ GRADE**	TIME SPENT	COMMENTS
1	Resource Forester (Presale Foresters)	460-9 (460-7/9) (462-7/9)	As nec.	Works well
2	Presale Foresters	460-7/9 462-7/9	5%	No problems yet.
3	Resource Forester	460-9	5%	Preferred method.
4	Presale Forester Small Sale Foresters	460-9 462-7/9	As nec.	Each sec. responsible for SO coord
5	Resource Forester	460-9	4-6%	Preferred method.
6	Presale Forester Small Sale Forester	460-9 462-7	<5%	Works well.
7	Silviculturist (Presale Foresters)	460-11 (462-7/9)	As nec.	Foresters know the ground best.

*The District coordinator(s) is/are the individuals whose name appears without parantheses. Those persons in parantheses have immediate project responsiblity and use the district coordinator for advise and review.

** 460 = Forester, 462 = Forestry Technician

A point of general agreement was that the landscape architect at the Supervisor's Office should provide training, conduct periodic reviews, introduce the latest technology and handle all sensitive sales that exceed the experience or confidence level of the district paraprofessional.

The minimum level of training for the district coordinator is considered by each unit manager to be; Level III - Visual Resource Management Applications (3 days) and Tektronix Perspective Plot training (1 day). VRM updates and coordination of annual district reviews are also a part of the paraprofessional's responsibilities.

BENEFITS OF DECENTRALIZAITON

The primary and most obvious benefit is the fact that the visual resource management job is getting done on more projects than just one person could accomplish. The involvement of a greater number of people makes VRM that much more part of "normal" Forest Service procedure rather than a specialty that should be considered only in certain instances. Group participation in visual resource management allows for "brainstorming" and idea-sharing to occur. All of the persons involved in project planning can learn from one another. Often design alterations are more palatable when those suggestions come from foresters or other district resource personnel.

The physical separation of specialists working out of the Supervisor's Office (SO) and the district people increases the difficulty in achieving a good working relationship based on mutual respect and trust. Infrequent contact increases the gap in such relationships. There is a recurrent feeling, often implied rather than stated, that persons who work in the SO do not understand district operations. Likewise, specialists sometimes feel that district people are so intimately involved in what they are doing they fail to see the "big picture". Giving more program management responsibility to the people on the ground is a good way to convey trust and respect.

Decentralization places the responsibility on the sale planner, project leader, or those actively involved in providing input through the interdiciplinary team process at the district level. Those persons usually have a thorough knowledge of the situations on the ground and the resources involved. A sensitivity to the interrelationships of those resources is developed by consistently observing forest management in action. On the Kootenai, an SO specialist must become familiar with seven ranger districts: their resource situation, management concerns and program priorities. Changing from district to distict on almost a daily basis lessens the level of involvement and familiarity one can expect from SO specialists.

Another benefit of the decentralization process deserves attention. In these times of personnel and budget reductions, flexibility in moving for either personal or career reasons is extremely limited. Competition for desirable jobs is achieving levels not recently seen in the Forest Service. Making oneself more competitive through diversity in job skills has taken on as much importance as expertise in a specific area. Likewise, a good manager will be looking for a candidate who is capable of making multi-resource decisions. The addition of visual resource management experience to a forester's resume may be a deciding factor in selection.

PROBLEMS OF DECENTRALIZATION

It should first be understood that VRM on the Kootenai National Forest is very challenging. Steep slopes and texture dominant landscapes make integration of activities difficult. The annual harvest from the Kootenai is one of the highest in the Region. Wildlife and fish of all sorts are abundant; there are significant populations of threatened and endangered species. Fuel and weather conditions complicate the process of prescribed burning. All these factors affect the ease of integrating visual concerns into project design.

The most obvious problem with visual resource management decentralization is the increased workload to persons already assuming the responsibilities of positions that are being eliminated. That fact is recognized by everyone from the regional forester on down. A current need of the organization is the deemphasis of every task that is not essential or required by laws of sound resource

management. The effort to do more with less is a reality given the economic situation of the United States and indeed the world. New ways of doing business and the elimination of paperwork can help to ease the strain. Having persons with the capability to think in terms of multiple resources rather than focusing on a single discipline is another way to overcome such problems.

And, of course, the VRM job may not get done the way a landscape architect would have done it. That situation involves a judgement of quality that has many gray areas. Those standards can only be established by example and training. Reference to the standards outlined in the Visual Management System Handbook Series can help the paraprofessional, however, the learning process is bound to be slow. Mistakes occur; they should not be a reason for punishing or chastizing. (Deliberate lack of consideration for visual resources is counter to law and requires immediate correction.) A failed attempt to meet visual concerns should be a learning experience. Through the monitoring process, the point at which the situation failed to meet objectives needs to be identified. Steps should be taken to prevent the same thing from occurring on subsequent projects.

The design skills necessary to deal with the full gamet of VRM tasks are not equally meted out to all people. For routine work, there are ways to compensate for a lack in design abilities. The troubleshooting guide in Chapter Three, suggestions from handbooks, and information found in the appendices of this paper all provide ideas and direction for accomplishing a modicum of VRM without the need for intensive training. The basic elements of the VRM system allow for the minimization of visual contrasts to be addressed in terms of form, line, color and texture. Reducing the problem by solving one contrast at a time can produce good results especially as experience increases.

Other problems that pertain to non-resource matters are of no lesser concern. One of the most important factors to the success of decentralization is the consistent support of the line officer on the unit and the forest. Fluctuations in that support, or a lacking, has serious ramifications to any resource program. The lack of "hard targets" in visual resource management oftens puts it in the background to those output resources. When managers focus on singular concerns to the detriment of others, that attitude is carried over to their staff. Priorities shift to reflect those of the immediate supervisor.

Crucial to the program's success is a high level of personal committment and interest of the person responsible for the VRM task on the district. If a person assumes that responsibility reluctantly, the results will show in the quality of work. The capability of that person to function in a team setting will be reflected in the level of accomplishment of VRM objectives. Therefore the district paraprofessional should be selected with care. Interest and level of committment are more important than the series or grade of the individual.

A less recurrent problem in these days is the mobility of the Forest Service work force. In the past, district persons fully trained and functioning in VRM were likely to move on in a couple years. Although it happens less frequently, it can still occur. For this reason, it is important to have several people working on mastering VRM skills simultaneously. A skilled district paraprofessional can in turn train others on the job or the responsibilty of the district coordinator can be shared by a number of people. Each district ranger should decide which system will work best for that unit. Suggestions from the landscape architect, if he/she has worked with many of the individuals, on people qualified to do the job are appropriate and usually welcome.

RESPONSIBILITIES

The landscape architect must support and continually nuture the decentralization process through as many avenues as possible. Visibilty of the VRM program at all level of the organization (including the Regional and Washington offices) is very important. Highlighting special projects, successes and contributions to the overall resource management of the forest is one valuable method. Periodic semi-annual district reviews in the office and field are also essential. Feedback must be provided to the unit manager and the persons performing the VRM task.

The landscape architect needs to provide guidance and training to key district individuals. To do this successfully he/she must stay current in the latest research findings and techniques. Essential information should be passed on directly to the district coordinators instead of waiting for a formal training session. The information must be concise, understandable and practical. Lengthy philosophical dissertations will not likely be read or appreciated. Functional ideas that consider other resource limitations and that can be directly applied in planning or the field will do much to further the goals of decentralized VRM. Information on training is available in Chapter Four.

Landscape architects reviewing environmental assessments, sale plans and/or projects in the field must remember to keep their expectations reasonable. Praise for a job well done is essential. Appreciation of and an interest in the complications that the paraprofessional has to deal with in each project makes the specialist less of a critic. When criticism is necessary, it should be constructive in nature: a lesson instead of a reprimand.

Success of the program depends on personal interest of the landscape architect in all paraprofessionals. The landscape architect needs to know who the individuals are, what their skill levels are, and the level of involvement they expect from the SO. Their responsibilities must be clearly defined and dovetailed with the responsibilities of the visual specialist. Those people need to be motivated and encouraged. Tools must be provided to enable paraprofessionals to do the job with the least amount of effort and time. Incentives, such as; training opportunities, exposure to the latest techniques, budget increases to help sponsor training or special projects, certificates of appreciation, or simply favorable comments to them and their supervisors, can provide motivation.

It is impractical to think that budgets in visual resource management will increase. To date, VRM has never appeared as a separate line item. It is not likely that it will. So the process of decentralization focuses on personnel management rather than manipulation of budgets. The right person for the job, with the right training is the first step toward successful implementation. Line and management support is critical to that growth. And lastly, the landscape architect cannot breathe a sigh of relief and leave the paraprofessional to wade through projects unassisted and unappreciated.

CHAPTER FIVE: TRAINING

"Teaching and Learning"

This chapter will cover available training sessions, recommended courses for paraprofessionals and on-the-job opportunities to learn visual resource management. Training recommendations for the landscape architect will be discussed. Trends in VRM training and current Kootenai National Forest needs will be identified.

Incorporating visual resource management into existing recurring Forest Service training sessions can be cost-effective and time saving. It allows for more frequent exposure to VRM concepts with the added benefit of being discussed within varying contexts of forest management. Particular courses that are suitable for including VRM will be identified.

PAST TRAINING EFFORTS

The formalization of the visual management system was marked by the publication of the initial handbooks in the National Forest Landscape Management series. The handbooks provide detailed definitions of the concepts and principles of visual analysis and a description of the steps involved in forestwide visual inventories. (U.S. Ag. Handbooks #434 and #462) These publications were extremely valuable in the defining the scope and objectives of visual resource management (VRM). Much effort was focused on defense of the system by describing basic elements of design and displaying research results and commonly agreed-to premises.

With these documents in hand, the forest landscape architects sought to educate all those directly and indirectly involved in the principles and rationale behind VRM. Initially the "training" was more awareness than how-to. Many fine audio-visual training aids were developed using commonly accepted images of good and bad visual quality. Usually, these sessions required about four to six hours.

The second stage of VRM training in the late 1970's increased emphasis on the visual inventory process. Awareness of visual premises and the need for such management remained in the program however "inventory" became the keynote. Seeking cooperation through education, the techniques of determining character type, variety class, sensitivity levels, and distance zones were described. How these data interrelated and combined to provide a visual quality objective was the crux of the message. District personnel then could understand the relationship of visual objectives to actual situations on the ground. This type of session involved audio-visual presentations and informal worksheets, and required eight to twelve hours of instruction.

Such training sessions were offered yearly or every other year. The target audiences were typically selected based on the primary resource of the forest. In the case of the Kootenai, the attempt, at minimum, was to expose all foresters to basic instruction in VRM. Engineers, because of their involvement in road location and construction were also included.

As district personnel began managing the visual resource under the indirect tutelage of the landscape architect, the need for increased training became evident. The basic course content broadened to include more detailed instruction in independently identifying and solving basic visual problems. It was now necessary to stratify the audience, providing each group with the information essential to their work. The following outlines the Kootenai National Forest approach to this need.

RECENT TRAINING EFFORTS

It is not the author's intent to advocate this particular format for VRM training above others. Rather, the following is presented as an example of a evolutionary step in the decentralization of VRM.

One week every other year was set aside for forestwide VRM training. Two half-day **Awareness** sessions were held the first day for any individual interested in the basic concepts of VRM. Typically, these persons did not deal directly in VRM at the project level for example receptionists, supervisor office staff and line officers.

The following day was designated an **Understanding** session. Here the emphasis was on terminology, inventory and thorough comprehension of the implications of each visual quality objective. Persons needing to understand the applications of VRM as it affects their daily work were targetted, such as transportation planners, sale administrators and other resource specialists.

The final three days of the week were committed to the **Working Knowledge** session. Participants were resource specialists, primarily in timber, who were responsible for project level decisions which directly affected the visual resource. This course is considered mandatory for persons designated as district VRM coordinators.

In this course, a brief review of the material presented in the beginning of the week preceded intensive training in the actual, independent application of VRM techniques. Audio-visual programs* defining advanced techniques of meeting visual quality objectives were presented. Sample situations dealt with a.) each of the timber species represented on the forest, b.) vegetative management along highway corridors, and c.) integration of other resource needs. The latter topic was covered by experienced specialists in fire, wildlife, logging systems and transportation planning.

Independent classroom worksheets and discussions preceded group field work. Two real timber sale areas were visited with complex resource concerns. The groups' assignment was the design and presentation of a harvest alternative that met the visual quality objectives and volume objectives. The class evaluated the proposals. Course critiques indicated this was one of the most valuable portions of the session.

FUTURE DIRECTION

Since the training effort outlined above has been practiced in some form on most forests, key individuals are very aware of the role and function of VRM. Indeed the program has become rather well-integrated into the Forest Service daily work, validated by a growing number of examples of good visual management.

*National Forest Landscape/Timber Management Slide Series by Bacon, et. al..

Increasingly, the message from the field is, "All right, we believe you! Enough of getting us to buy into the program. Show us how to do it!" To answer that need is the responsibility of future training sessions.

On-the-job training is a very effective method of instruction. Enlisting individuals to assist in visual resource work in the field or office is one avenue. Assigning a district VRM coordinator to a short detail working with the landscape architect benefits both parties. Conversely, a landscape architect could work a detail on a district to better learn the complexities of other resources. Simultaneously, the accomplishment of VRM objectives can be demonstrated within the framework of the district coordinator's position. Service visits can be a form of on-the-job training but should not be used exclusively as they tend to be more general in nature, addressing trends, not site specific problems.

Formal training sessions should focus on practical application of VRM by example of existing situations on-Forest. Slides accompanied by project plans and maps are some of the best instruction methods available. Slides alone of the completed project often do not illustrate the specific problems that had to be addressed. However, slides can be used to generate general discussion of VRM principles and applications. Requesting assistance in presenting the course from other resource specialists has many advantages. Expert opinions carry more weight, the landscape architect has less preparation, variety in speakers will add interest to the session, and peers who have dealt with VRM concerns are usually easier to relate to than a specialist in VRM. Training held in early spring or late fall will have better attendence than workshops scheduled during field season.

A formal training session which focuses on using the perspective plot computer programs currently available is indispensible in the decentralization process. If such a program is available on-forest, several persons from each district should know how to operate the equipment independently or in pairs. Emphasis should be on producing working drawings rather than on "show quality" products. User guides need to be readily available for all trainees. Perspective plot training parallels other VRM training; it is not a substitute. This type of session lends itself to winter scheduling.

Mini-sessions held for several districts at a time can be an effective way to impart training to a small group in a short amount of time. This effort will be appreciated by districts in light of restricted budgets and travel time. Mini-sessions can effectively deal with specific visual challenges more so than in a larger group. Topics such as;

-Vegetative management in developed recreation sites,
-Visual monitoring,
-Administration of visually sensitive sales,
-Highway corridor management,
-Viewshed planning,
-Trail maintenance and construction,
-Applications of K-V funds to achieve visual and recreation goals,
-Integration of fuels and visual management, and
-Factors affecting visual quality in road layout/contruction/maintenance.

All are excellent candidates for mini-sessions. Scheduling this type of session during the field season is more acceptable, particularly if field work is an integral part of the workshop.

An exciting new development in Region One is the development of a self-study course in VRM. The course is a valuable refresher for individuals who have not had an opportunity to regularly exercise their VRM skills. Self-instruction in computer graphics is available via book (Tektronix, see bibliography, Gross) and software (Hewlett Packard 9000's).

REFERENCE MATERIALS

The district paraprofessional should have immediately available the following materials.

-USDA Ag. Handbooks on Visual Resource Management as listed in the bibliography. The series consists of an introductory VRM handbook followed by seven resource specific handbooks. (The Visual Management System, Utilities, Range, Roads, Timber, Fire, and Ski Areas)
-Visual Significance Overlays and Sensitivity Level Maps.
-The Integrated Forest Plan prescription handbook.
-Applicable appendices from this paper, including Chapter Three: Processes.
-Other references pertinent to describing existing resource and visual situations such as the Kootenai National Forest Lands System Inventory.

PROFESSIONAL NEEDS

Landscape architects should have all of the above available in sufficient quanity for distribution. Keeping current on the latest research is always beneficial for one's own edification and for support of one's initiatives.

Training for landscape architects should include resource specific courses such as road location, logging system, environmental document writing, wildlife habitat management, fuels management, forest habitat types, and silvics. On-the-job training, details and formal coursework are possible methods of obtaining this kind of information. Professional seminars and workshops on communications, meetings management and instructor training are important as well.

The landscape architect must not only gain skills to present visual management information but must also develop innovative ways of getting that information to the widest audience possible. Incorporating visual resource presentations into existing recurring Forest Service training sessions can be cost-effective and time saving. It creates opportunities for more frequent exposure to VRM concepts with the added benefit of being discussed within varying contexts of forest management. Multi-resource training will become more common as budgets and allowable training time decrease.

SUMMARY

As with so many other facets of complex forest management functions, the key to the resolution of conflicts is in education. People need to have an understanding of the elements they are working with, the effects of certain actions and the alternatives available to solve problems. Visual resource management training is the on-going process of providing tools to accomplish objectvies.

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APPENDIX A

GLOSSARY

Background - A viewing distance zone that is farther than five miles from the observer. Activities are least evident in the background.

Developed Recreation Site - A recreation site that is formally constructed and maintained for controlled public use.

Dispersed Recreation Site - Recreation improvements may exist but are not required. Use is uncontrolled; maintenance and improvements are limited.

Foreground - A viewing distance zone that is within a half mile of the observer. Activities are very obvious.

Impact - Management activities' results that constrast with the natural characteristics of the landscape.

Midground - A viewing distance zone that is within a half mile to five miles from the observer.

Off-site Recreation - Recreation use that does not physically occur on a particular landtype but is adjacent to and visually dependent upon it.

On-site Recreation - Recreation use that physically occurs on a landtype.

Recreation Use Potential - An estimation of the current and projected use of a landtype for all forms of recreation. It is based upon the capability of that site to support a high volume of a particular type of recreation and/or a wide variety of recreation.

Sensitivity Level - This is a formal forest-wide inventory that identifies people's concern for the visual quality of the forest setting. Sensitivity levels are based upon number and types of people using a particular road, trail or use area (recreation or residential).

Visual Absorption Capability - The ability of a landscape to absorb visual change. Visual absorption capability may be used as a predictive tool defining ability to meet visual quality objectives (VQO's). High capability implies ease in meeting most VQO's. Low capability areas will require extensive mitigation to achieve higher level VQO's.

Variety Class - A formal forest-wide inventory that assesses the inherent visual variety of a landscape, hence its attractiveness. It is based upon the diversity and uniqueness of its physical attributes relative to the characteristic landscape of that geographic province.

Visual Quality Objective - A rating that qualifies the amount of alteration

of the natural landscape that is acceptable given viewer sensitivity, viewing distance and the inherent visual variety of the landscape.

Visual Recovery Period - The length of time a landscape will need to reduce unnatural contrasts to the level required by the visual quality objective prescribed.

APPENDIX B

VISUAL RESOURCE ANALYSIS

IN THE ENVIRONMENTAL ASSESSMENT REPORT

This is a guide to the incorporation of visual resource management concerns into Environmental Assessment reports, whether that input is to be provided by Unit personnel or a Landscape Architect.

The National Environmental Protection Act (NEPA) provides criteria for environmental analysis actions as reprinted in the Federal Register, Vol. 46, No. 223, Thursday, November 19, 1981; pages 57003 and 57004. See Appendix A.

12.0 Analysis Actions

12.1 Identify Purpose and Need

It is the responsibility of the District/Zone, and ultimately the District Ranger/Zone Engineer, to determine the need for, and the scope and intensity of, visual resource analysis for each project. Recommendations may come from Unit personnel and/or Landscape Architect within the project feasibility report.

12.2 Develop Criteria

Landscape management input can be provided by District/Zone personnel or a Landscape Architect. Landscape Architect involvement may take a variety of forms: telephone consultation, informal memo, maps, computer-generated perspective plots, formal memo, participation on the IDT as an ad hoc or core member. See Appendix C for details.

12.3 Collect Data

Existing visual management data are available from existing land use plans and more current visual inventories. Data include:

- Visual Quality Objectives (LUP)
- Variety Class (IFP input)
- Sensitivity Levels (LUP/IFP)
- Existing Visual Condition (IFP)
- Visual Significance (LUP)
- Prescription Guidance/Direction (LUP)
- On-the-Ground Inspection

12.4 Interpret Data

This section could be viewed as an expansion and refinement of existing information by field and office review. A description of the affected environment is important. This will provide the basic context or fabric against which alternatives can be analyzed. Appendix B provides a checklist identifying the information that might be included in such a description.

12.5 Formulate Alternatives

All lands have a Visual Quality Objective. Therefore, there are seldom alternatives developed that are without any visual considerations. It is prudent to recognize the visual impacts (negative and positive) of proposed actions regardless of whether the alternative is structured to favor timber, wildlife, or other resources.

12.6 Estimate Effects

Effects on the visual resource can be expressed quantitatively and qualitatively. Subjective terms, such as pretty, beautiful, etc., do not suitably define situations and are subject to personal interpretations. Terms such as line, form, color, and texture as well as apparent size, shape, and pattern are addressable in both quality and quantity and are more appropriate. Mitigative measures involving no significant costs, should be identified at this time. Integrating these measures into each alternative will clarify the actual visual effects that are unavoidable without notable cost increases.

12.7 Evaluate Alternatives and Identify the Forest Service Preferred Alternative(s)

The final alternative evaluation needs to address specifically what the net visual effects of each alternative are. The quantity and cost of mitigative measures necessary to allow the alternative to meet the recommended visual quality objectives is an important factor. Other considerations might include: recovery time, sociological impacts (how will activities impact the residents, recreationists, and tourists), how effectively rehabilitation needs are being met and effects on future management (cumulative impacts).

The quantity of visual change is not as important as the quality of that change. A well shaped 40A cut could have a more positive visual impact than one 15A geometric unit.

"No Action" where rehabilitative needs exist is often not the best alternative. "No Action" could force entry into a more sensitive area to meet volume output levels. Thus the visual sensitivity/significance of this project area must be considered on a District-wide scale when evaluating the preferred management option.

The effects of the transportation systems, especially on a long-term basis, should be evaluated carefully. Roads set the management pattern over time and have a potentially longer lasting visual impact than other vegetative manipulation.

GLORIA E. GROSS
Landscape Architect
Kootenai National Forest

Exhibit 2—Usual Role of Participants

NEPA process	Responsible official	Staff specialist or interdisciplinary team	Agencies, organizations and individuals
1 Environmental analysis actions:[1]			
a Identify purpose and need	Approval	Responsible	Recommend
b Develop criteria	do	do	Do
c Collect data	Review	do	Provide information
d Interpret data, analyze the situation	do	do	Do
e Formulate alternatives	do	do	Recommend.
f Estimate effects	do	do	Provide information
g Evaluate alternatives	do	do	Do
h Identify the preferred alternative	Responsible	Recommend	Recommend.
2 Documentation	Review	Responsible	Review
3 Decision	Responsible	Recommend	Do
4 Implementation and monitoring	do	Assist	Assist.

[1] Analysis actions may be combined as appropriate to the situation.

12--Analysis Actions. Environmental analysis uses a systematic interdisciplinary approach to examine a proposed action and alternatives, and their effects, as an aid to identify a preferred course of action. The process is an integrated component of planning and decisionmaking for actions for which the preparation of an environmental assessment or environmental impact statement has been determined to be necessary. Therefore, the Environmental analysis process should provide the information needed to prepare environmental assessments or environmental impact statements.

Because the nature and complexity of a proposed action determines the scope and intensity of the analysis required, no single technique is required or prescribed. Various steps of the process outlined in this handbook may be combined, as appropriate. The disciplines involved in an analysis should be appropriate to the scope of the proposed action and issues identified. In each analysis, previously documented information should be used to avoid duplication of efforts. The line officer responsible for the decision on the proposed action must determine the scope and intensity of environmental analysis. If the need to complete the analysis is eliminated (that is, if a project application is withdrawn or for other reasons), the analysis should be stopped and the interested parties should be informed.

12.1—Identify Purpose and Need. Environmental analysis begin by identifying the objectives, issues, concerns, and opportunities to be addressed and the need for a decision.

At the outset the responsible official should determine from documentation already available and other experience related to the proposed action the approximate extent of analysis required to provide a basis for an informed decision. This preliminary determination helps decide whether an interdisciplinary team will be needed to carry out the remainder of the analysis process or whether a much less formal interdisciplinary approach will suffice. (Sec. 11.)

This initial appraisal also contributes to and guides subsequent steps in the analysis process. The following considerations are among those appropriate in this initial step.

1. Actions adequately addressed by another environmental document, such as an environmental impact statement for a forest plan. For such actions, a record of decision or a decision notice and finding of no significant impact adopting the previously prepared environmental assessment or environmental impact statement may be prepared with no further analysis necessary.

2. Environmental effects or other information discussed in another environmental document or other records. Information available from such sources may narrow the scope of the environmental analysis necessary and be incorporated by reference in the environmental documents prepared for the proposed action. (See secs. 22.4, Tiering, 22.5, Adoption, and 32.21, Incorporation by Reference).

Scoping is an integral part of the analysis process which is appropriate for environmental assessments and required for environmental impact statements. (Sec. 31.1.)

12.2—Develop Criteria. Criteria and standards guide the process and should be agreed upon early.

Forest Service objectives established in policies and plans should be considered in establishing criteria and standards.

Criteria are frequently needed regarding the following items:

1. The kind, detail, and accuracy of data.

2. The depth or level of analysis.

3. The formulation and evaluation of alternatives.

4. The determination of whether the environmental consequences of the proposed action are significant. (See 40 CFR 1508.27).

Criteria may be adjusted throughout the process as necessary.

12.3—Collect Data. The type and amount of data to be collected depends on the situation, objectives, issues, concerns, opportunities, and scope of anticipated effects. Data collection should focus on the present and expected future conditions of those physical, biological, economic, and social factors affecting and affected by the decision. Assumptions, methods, and data sources used in the analysis should be documented. For environmental impact statements a worst-case analysis should be made in the event that information essential to a reasoned choice among alternatives is not known or is not available. See 40 CFR 1502.22.

12.4—Interpret Data. Data and information must be interpreted to provide an understanding of current and expected future conditions related to the objectives, issues, and concerns. This may include supply and demand relationships and other relevant physical, biological, economic, and social factors.

12.5—Formulate Alternatives. A range of reasonable alternatives must be developed to provide different ways to address significant issues, objectives, concerns, and opportunities. All reasonable alternatives must be considered.

"The phase 'all reasonable alternatives' is firmly established in the case-law interpreting the NEPA. The phrase has not been interpreted to require that an infinite or unreasonable number of alternatives be analyzed." (Supplementary information for the Council on Environmental Quality Regulations, Federal Register Vol. 43, No. 230, Nov. 29, 1978, p. 55983).

Objectives from legislation or higher-order Forest Service plans, programs, and policies guide but do not necessarily limit the range of alternatives.

The alternative of taking no action must always be considered. Two distinct interpretations of "no action" are often possible depending on the nature of the proposal being evaluate. The first situation might involve an action such as updating a land management plan where ongoing programs initiated under existing legislation and regulations will continue, even as new plans are developed. In these cases "no action" is "no change" from current management direction or level of management intensity. Consequently, projected impacts of alternative management schemes would

be compared to those impacts projected for the existing plan.

The second interpretation of "no action" might involve Federal decisions on proposals for projects. "No action" in such cases could mean the proposed activity would not take place. The resulting environmental effects from taking no action would be compared with the effects of permitting the proposed activity or an alternative activity to go forward.

In each case the analysis can provide a benchmark, enabling decisionmakers to compare the magnitude of environmental effects of the alternative actions. Reasonable alternatives outside the jurisdiction of the Forest Service must also be considered when environmental impact statements are involved. See 40 CFR 1502.14.

Alternatives should be fully and impartially developed. Care should be taken to ensure that the range of alternatives does not prematurely foreclose options which might protect, restore, and enhance the environment.

Alternatives are often modified and/or new alternatives may be developed as the analysis proceeds.

Alternatives should include management requirements, mitigation measures, and monitoring of environmental effects.

12.8—Estimate Effects. (See 40 CFR 1502.16 and 1508.8.) The effects of implementing each alternative must be estimated. Direct, indirect, and cumulative effects must be considered. Effects may be expressed in terms of changes in the physical, biological, economic, and social components of the human environment for each alternative. The changes should be those associated with implementation of alternatives and, when possible, should be analyzed in terms of differences from the present condition, magnitude, duration, and significance. See section 41 for a list of environmental factors which may change as a result of implementation of the various alternatives. It is not always necessary to deal with all factors and components of the environment. The effects considered in detail should be those significant to the objectives, issues, concerns, and opportunities.

If indicators of economic efficiency are appropriate, they should be developed in this step.

Unquantified environmental amenities and values must also be appropriately considered.

Although separate analysis is not necessary, the following must be considered for all alternatives:

1. Effects on consumers, civil rights, minority groups, and women. (Secretary's Memorandum 1962 Supplement 8, OMB Circular A-19, and FSM 1730).

2. Effects on prime farmland, rangeland, and forest land.

3. Effects on wetlands and flood plains.

4. Effects on threatened and endangered species.

5. Effects on cultural resources.

If the information relevant to adverse impacts is essential to a reasoned choice among alternatives being considered in an environmental impact statement and is not known, see 40 CFR 1502.22.

If the need for an environmental impact statement has not already been established (FSM 1963), the significance of effects in terms of context and intensity must be considered to determine the need for an environmental impact statement. See 40 CFR 1508.27, "significantly," for definition of "context" and "intensity."

12.7—Evaluate Alternatives and Identify the Preferred Alternative(s). Alternatives are compared, using evaluation criteria, on the basis of their effects on the human environment. This evaluation, along with other relevant considerations, provides a basis for identifying the preferred alternative(s).

NEPA Procedures Handbook, Chapter 20—Environmental Assessments

Contents

NEPA Procedures Handbook

Chapter 20—Environmental Assessments

21—Documentation. (See FSM 1962.) The length and detail of documentation in an environmental assessment may vary according to the complexity of the issues involved in the decision. If an environmental analysis reveals that an action significantly affects the quality of the human environment, then an environmental impact statement is needed and a notice of intent should be published.

21.1—Format and Content. (See 40 CFR 1508.9.) An environmental assessment may be prepared in any format useful to facilitate planning and decisionmaking as long as the requirements of 40 CFR 1508.9 are met. It must include brief discussions of:

1. The need for the proposal.

2. Alternatives as required by Section 102(2)(e) of NEPA.

3. Environmental impacts of the proposed action and alternatives.

4. A listing of agencies and persons consulted.

22—Other Considerations.

22.1—Public Involvement. See 40 CFR 1502.25 and 1508.8.

22.2—Responsibilities When Applicants and Contractors Are Involved. (See 40 CFR 1506.5(b)). Applicants or contractors may be required to conduct studies to determine the impact of the proposed action on the human environment and to provide data and documentation. When an applicant is permitted or a contractor is employed to prepare an environmental assessment, their activities should be limited to the usual role of participants for staff, specialists, and interdisciplinary teams shown in exhibit 2, chapter 10.

22.3—Tiering. (See 40 CFR 1502.20 and 1508.28.) Tiering is appropriate to environmental assessments as well as environmental impact statements. (See also sec. 35.1.)

22.4—Adoption. (See 40 CFR 1506.3.) Adoption is appropriate to environmental assessments as well as environmental impact statements.

22.5—Incorporation by Reference. See 40 CFR 1502.21.

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23—Decision.

23.1—Decision Notice. A decision notice may be a separate document or combined with a finding of no significant impact which is attached to the environmental assessment.

The decision notice may also be an integral part of brief environmental assessments. See exhibit 1 for a combined decision notice and finding of no significant impact. See exhibit 2 for a combined environmental assessment, decision notice, and finding of no significant impact.

Appendix A

EXHIBIT 2—USUAL ROLE OF PARTICIPANTS

[illegible] process	Responsible official	Staff specialists or interdisciplinary team	Agencies, organizations and individuals
1. Environmental analysis actions:			
a. Identify purpose and need	Approve	Responsible	Participate
b. Develop criteria	Do	Do	Do
c. Collect data	Review	Do	Provide information
d. Interpret data, analyze the situation	Do	Do	Do
e. Formulate alternatives	Do	Do	Recommend
f. Estimate effects	Do	Do	Provide information
g. Evaluate alternatives	Do	Do	Do
h. Identify the preferred alternative	Recommend	Recommend	Recommend
2. Documentation	Review	Responsible	Review
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Scoping is an integral part of the analysis process which is appropriate for environmental assessments and required for environmental impact statements. (Sec. 91.1.)

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APPENDIX B
NEPA PROCESS - EA CHECKLIST
VISUAL RESOURCE INPUT

I. Description of Affected Environment

A. General Appearance

1. Topography
2. Vegetation: age, density, texture, health
3. Significant Drainages
4. Existing Visual Condition: intensity of management, degree of recovery, rehabilitation needs
5. Special Features: rock outcrops, park-like settings, relationship of site to surroundings, water features
6. Overall Quality: uniqueness, variety

B. Viewing Situation

1. Major Viewpoints and Assigned Sensitivity Level: roads, developed recreation sites, trails, towns, residential clusters
2. Viewing Distance and Duration of View

C. Recreation Attributes

1. Known Use Areas: RIM, trail inventory, local knowledge
2. Type of Use
3. Intensity of Use
4. Special Recreation Attractions
5. Opportunities for Improvement: access, parking, trailhead

II. Management Situation

A. Current Visual Direction

1. Land Use Plan/Integrated Forest Plan allocation
2. Visual Quality Objectives
3. Visual Absorption Capability
4. Visual Significance

B. Current Recreation Direction

1. Land Use Plan/Integrated Forest Plan allocation
2. Recreation experience/development level desired to create or maintain
3. Potential recreation use

SAMPLE: Description of Affected Environment

Visual Resource

The Schrieber-Swamp timber sale assessment area is bounded by a ridge system on the north, west, and south; and State Highway 2 on the east. The drainages run west to east opening into a narrow flat valley bottom through which the highway passes. There are several residences in the foreground along the highway.

The moderately steep rolling ridges of the drainages fold in on themselves limiting views into their bottoms and upper reaches. The tree canopy is uniform with the exception of old clearcuts. Vegetation, brush, and young trees are evident within the units; most roads and skid trails are screened. The apparent shape of the units is geometric, contrasting with the characteristic landscape.

Of major significance are the seen areas from the Sensitivity Level One viewpoint, Highway 2. Of lesser significance are Sensitivity Level Three viewpoints along Coyote Creek Road, Schrieber Creek Road, and Horse Mountain Lookout. The recommended visual quality objectives from the land use plans are attached in map form.

Future management activities would allow for visual rehabilitation to improve the appearance of the seen area. This would primarily involve edge modification of existing units. New roads within the seen area could have a detrimental effect on the visual resource.

Recreation Resource

Several trails are in the sales' vicinity. Libby Divide Trail, No. 716, listed in the Regional Trail Transportation Plan and Inventory, bounds the west ridge above Swamp Creek. It has been bisected by a road and a clearcut is adjacent to it.

The Swamp Creek Trail connects the highway and Horse Mountain. The lower half of the trail is on private land; the upper half is bisected by a road and has a clearcut on top of it. There is no maintenance record for Swamp Creek Trail.

Other recreation uses within the sale areas are hunting, horseback riding, berrypicking, and wood gathering.

The Hoodoo Land Use Plan identifies the Swamp Creek drainage as having a high suitability for active/extractive recreation activities. The Upper Fisher Land Use Plan does not classify recreation types. It merely indicates that Schrieber Creek is not suitable for primitive recreation.

Further harvest activities may create more access for gathering activities and generally improve vehicle-related recreation. Impacts of roading and cutting to trails should be assessed.

Appendix C

The following describes the kinds of tasks that may be performed by a Landscape Architect in order to provide visual input to Timber Sales and Area Transportation plans.

VISUAL RESOURCE MANAGEMENT (VRM)

A. Timber Sales

1. Services and Products

a. Verification of the seen area, sensitivity level, variety class, initial VQO, and adopted VQO as established by the land use plan.

b. Mapping of the visual absorption capability (VAC), primarily on projects that fall within the high priority category.

c. Preparation of conceptual guides for integrating visual resource management concepts in timber sale design.

d. Graphic aids illustrating the visual appearance of timber harvesting projects, to be used in design and layout, and public involvment. This includes perspective sketches and computer-drawn perspectives.

e. Predict how well the proposed timber sale layout will meet the adopted VQO. Create alternative proposals using graphic aids if the project cannot meet adopted VQO's.

f. Review of timber sale contract specifications to help Districts insure that the planned visual character is achieved by proper specifications for items such as slash disposal; that roads and logging systems are appropriate to visual objectives, etc.

g. Graphic and written proposals on how past management activities can be altered or rehabilitated to meet the VQO adopted in land use plans.

2. Tools and Information Required By the LA

   a. Brief description outlining the project scope, expected outputs, special resource concerns. When available, include stand data, proposed silvicultural prescriptions and logging systems. A timetable for EA inputs, field work and other critical dates, along with a list of LA services required.

   b. Sale map illustrating project area and known observer points. Four inch to the mile scale is preferable, especially for design evaluations and perspective plots. Existing and proposed transportation systems and cut units should be indicated when known.

3. Involvement Stages (if requested)

   a. The LA should be notified of project priorities and timetables through the annual work planning meetings or through the appropriate Staff leaders.

   b. The LA should be called on if necessary for field review and advice before planning stage--services and products to be determined at this time. Direct involvement may result from the LA becoming an actual member of the timber sale interdisciplinary design team.

   c. The LA may be called out for field review and analysis of final plans prior to construction.

   d. The LA may be part of a review team which reviews the project after completion.

B. Fuel Modification

1. Services and Products

   a. Concept plans for visual considerations in fuelbreak and burn area layout (edges, islands, and overall form).

   b. Field reviews during and after construction of fuel modification project.

   c. Mapping of the visual absorption capability classes of the landscapes affected by the project. Only on highly sensitive projects.

d. Preparation of conceptual guides for integrating visual resource management concepts into fuelbreak design. Temporary guides are available now with handbook being prepared. Keep District and SO aware of study examples and guidelines produced by others.

e. Graphic aids illustrating the visual appearance of fuel modification projects to be used in location studies, design and layout, and public involvement. This includes models, perspective sketches, photo montage, and computer-drawn perspectives (mosaic). These aids would only be developed on highly sensitive projects.

2. Tools and Information Required by LA

a. Brief program outlining the project scope, methods of construction, and timetable for planning and construction.

b. USGS quad map showing project location and area of influence.

3. Involvement Stages (if requested)

a. The LA should be notified of project priorities and timetables.

b. The LA should be called out for field review and advice before planning stage--service and products to be determined at this time.

c. The LA should be called out for field review and analysis of final plans prior to construction.

d. The LA may be called out to review adherence to visual objectives during construction.

e. The LA should be called out to review the project after completion.

C. AREA TRANSPORTATION PLANS

1. Services and Products

   a. Verification of the seen area, sensitivity level, variety class, initial VQO, and adopted VQO as established by the land use plan.

   b. Mapping of the visual absorption capability (VAC), primarily on projects that fall within the high priority category.

   c. Preparation of conceptual guides for integrating visual resource management concepts in transportation system design.

   d. Graphic aids illustrating the visual appearance of the project area, to be used in location studies, design and layout, and public involvement. This includes perspective sketches and computer-drawn perspectives.

   e. Predict how well the proposed road layout will meet the adopted VQO. Recommend alternative proposals if the project cannot meet adopted VQO's.

2. Tools and Information Required by LA

   a. Brief program outlining the project scope, methods of alternative development, and timetable for planning and construction.

   b. USGS topographic map showing project location at the same scale as other project maps and inventories.

3. Involvement Stages (if requested)

   a. The LA should be notified of project priorities and timetables through the annual work planning meetings or through the appropriate Staff leaders.

   b. The LA should be called on if necessary for field review and advice before planning stages--services and products to be determined at this time. Direct involvement may result from the LA becoming an actual member of the interdisciplinary team.

   c. The LA may be called out for field review and analysis of final plans prior to construction.

   d. The LA may be part of a review team which reviews the project after completion.

APPENDIX C

A DESIGN FOR DECISIONS
--When Economic Benefit-Cost Analysis Can't Be Used

by

Elwood L. Shafer
and
James Davis

The Authors are respectively, Staff Assistant to the Deputy Chief for Research, and Staff Specialist in Fire Planning and Economics Research, USDA Forest Service, Washington, DC

Abstract

A process is described for making comparative valuations of future research efforts when the benefits that result from some of the efforts cannot be described in dollars. The process helps decide what priorities should be by using values and beliefs. The objective is to insure coherent decisions consistent with stated values. The process has application to decision problems faced by all executives.

Forestry in the year 2000 has already arrived. The future is committed by today's decisions how long-range research programs are proposed and constraints imposed. As forest management plans shape the size and timing of harvesting operations far into the future, so the networks of research paths, priorities and long-term investments, and allocation of resources among research areas, determine the technology of the twenty-first century. To be effective, long-range priority setting efforts must account for subjective judgment, and contain formal, rigorous decision strategies that replace intuition.

We decribe a process to set priorities among research efforts by using benefit scores and projected costs. Although developed to meet USDA Forest Service needs under the Resources Planning Act (USDA Forest Service 1984), the process has application to problems faced by executives, negotiators, policy makers, analysists and others who must make decisions under uncertainty and risk when the dollar benefits are unknown (Davis and Shafer 1983). Some other USDA research agencies and industry researchers have adopted the procedure (National Agricultural Research and Extension Users Advisory Board 1983). The basic premise in the process is that human judgment is indispensable to decision making in long-range planning.

The Problem of Setting Priorities

Usually, research managers set priorities on research efforts that cannot be evaluated through benefit-cost analysis. For example, one has to choose between concentrating resources on a new method to control gypsy moths, or a new way to measure aesthetics of landscapes. Economists can make a benefit-cost analysis of protecting trees from the gypsy moth and the costs of the new control. However, social benefits that may result from a new method to measure scenic quality are not easily described in economic terms. In addition, benefits from the gypsy moth control effort could be in the millions

of dollars; while, others insist that better ways to manage aesthetics are equally, or more, important. The problem is how to decide, given limited budgets, whether to invest in the gypsy moth or the landscape research?

The decision theory literature is filled with examples of how executives, when faced with a difficult, complex decision, traditionally gather information or appoint a committee to do it or both (Austin 1966, Kahn et al 1964, Richards and Greenlaw 1972). As a result, an executive may be overwhelmed with difficult to evaluate data, or become mired in trade-off considerations as proponents push favorite programs. When decisions are made it may be difficult to discover why the choice was made. There is no "audit trail".

A Design For Making Decisions

The design described does not make decisions and it does not portent what to decide. Rather, it helps decide what priorities should be by using values and beliefs. The objective is to insure coherent decisions consistent with stated values.

The design involves seven steps:

1. List items to evaluated
2. Select a panel of objective evaluators
3. Survey the panel to evaluate the items in terms of their overall benefits
4. Compute benefit scores
5. Estimate the costs
6. Compare initial benefit scores and costs
7. Adjust benefit scores to reflect management's values and beliefs

Each step is now described using hypothetical data.

List the Items

Suppose a research organization wants to arrange the following 10 research efforts--A through J--in order of priority, based on each effort's overall benefits and estimated costs:

A--Develop better understanding of factors causing major land allocation changes and land use conflicts.

B--Improve techniques for evaluating impacts of alternative management practices on future resource supplies.

C--Develop better techniques for managing and rehabilitating mining and oil extraction areas.

D--Improve recreation and landscape management strategies.

E--Improve technology for economic use of small or low-value timber.

F--Improve understanding of fire behavior and improve fire control methods.

G--Improve understanding of the dynamics of insect populations.

H--Provide information on nutrient cycling relationships associated with intensive forest management practices.

I--Determine the impact of alternative timber management practices on other uses.

J--Analyze markets and potential markets for wood and fiber supplies.

The degree of generality, or specificity, in the item descriptions is kept as uniform or as parallel as possible. This is not easy--especially if there are a large number of items.

In addition, the expected results from research within each of the 10 efforts must be described. For example, some of the study results under effort F, dealing with fire research, are:

- Better methods to forecast risk.
- Improved fuel management methods.
- Improved techniques for preventing fires.
- Better prescribed burning techniques for land management activities.
- Better prescribed burning techniques to reduce hazards.
- Improved understanding of the effects of fire.
- Increased knowledge about the economics of fire prevention, management, control, and hazard reduction.

The words used to describe the 10 efforts (A through J) are typical statements involved in priorty setting at the upper level of research management. For example, members of the National Agricultural Research and Extension Users Advisory Board (1984) use these kinds of broad, general descriptions of research efforts--within the decision design described here--when recommending research priorities to Congress. At other management levels research efforts may need to be defined more specifically. The question of "how specific" is a difficult one for two reasons. First, the number of alternative investment strategies available to the decision maker, even in the hypothetical example used here, may be enormous. Extensive heterogeneous information bears on each investment strategy. Second, the decision maker is faced with imperfect knowledge about the expected cost of each effort, as well as considerable uncertainty about its rate of adoption and the ultimate benefits--all are difficult (in many cases impossible) to specify in a totally objective way. Many times these things cannot be described very well even by the scientist(s) most intimately involved with the research (USDA Forest Service 1981).

Therefore, the research efforts and their expected results should be described in the context of the political, social, and managerial situations where the decisions are made.

Select a Panel

Methods for estimating the overall value of items under these circumstances have been developed in a wide range of disciplines--including economics, political science, psychology, and sociology. Despite differences in approach, these methods tend to blend. Pair-wise comparisons--comparing all items, two at a time--may be used, for example, to derive an attitude scale for a psychologist (Edward 1957, Thurston 1927, Torgerson 1958), or a utility scale for an economist (Sinden and Worrell 1979). In fact, the various disciplines often use different terms for the same things. Economists make the most use of these methods as value indicators for making priority decisions.

The second step, is to select a panel of knowledgable people to make judgments about the importance of the items to be evaluated. The number to include on the panel depends on the variation in the subjects to be considered. It is not always easy to separate scientific competence from policy involvement; indeed, that may be partly due to involvement in policy. On the other hand, selecting panelists purely for scientific competence may give results that are tilted toward one side of a policy debate. Select panelists who are "honest brokers" willing to be objective in judging overall benefits of the items evaluated.

Conduct A Survey

Third, panelists are mailed a description of the 10 research efforts, background information such as a list of the research results from each effort, and a survey form (Table 1). Everyone compares the 10 research efforts, two at a time, on the basis of: overall estimated social, economic, managerial, and scientific benefits.

Table 1.--Survey form and hypothetical entries of how one panelist compared all two-way sets of 10 research efforts.

There are two major reasons why a mailed survey is recommended over group discussions. One is cost. Second, fuzzy thinking abounds in initial group discussions of this kind. The desire for solidarity among panelists can cloud the initial analysis and thinking necessary to reach a balanced decision (Janis 1983).

Compute Benefit Scores

Fourth, the benefit scores are computed. The percentage of times all respondents select each research effort over every other provides the basic data for computing (Edwards 1957) the benefit scores (Table 2).

Table 2.--Hypothetical example of how benefit scores were calculated for 10 research efforts.

Estimate the Costs

Fifth, the annual cost of each effort needs to be estimated. This step should be done concurrently with, and independent of, the panel survey to develop benefit scores. Experienced persons should estimate the costs of the research without being influenced by benefit scores.

The total cost for each effort is discounted to present worth--the money needed today in order to fund the research in total. The rate of interest is selected by the executive.

Compared Initial Benefit Scores and Costs

A computer can digest and summarize details of the benefit scores and costs for the 10 efforts (Table 3).

Table 3.--Initial and final results, after fine tuning the benefit scores, of the 10 research efforts.

Each effort is then ranked and plotted according to benefit scores to form a benefit-only criterion curve. That is, the research effort with highest benefit score (in this case B) is plotted first, against its' cost. The effort with the next highest benefit score (A) is plotted second, etc., until all efforts are arranged along a continuum (Figure 1).

Efforts are also plotted by a cost-benefit criterion. In this case, D is plotted first because it has the largest benefit-cost value (Table 3), H is next, etc. (Figure 1).

The two resulting curves provide a tool that can be used along with other considerations, for making decisions under various cost constraints about program content and the priorities within those programs. As Figure 1 shows, the cost-benefit criterion curve always provides more benefits for a fixed research investment. For example, if a research program budget is set at 150 thousand dollars, a program that contains research efforts D, H, G, B, E, A, F, and C--with a total benefit score of 800--is preferred rather than a program with research efforts B, A, I, G, and E--with a total benefit score of only 660--(Figure 1).

Figure 1.--Cost-benefit versus benefit-only criteria: initial results

Adjustments By Management

The primary advantage of the decision-analytic approach, up to this point, is that it provides an organizing and clarifying framework for anaylzing complex situations. However, since management is responsible for content and success of its research program, final decisions on content and benefits of that program is theirs. Thus, management may wish to adjust initial results based on social, political, economic or scientific information that may not have been evident or important to panel members.

Such adjustment is a systematic method, whereby management examines, and may change, benefit scores (and thus the location) of efforts along the cost-benefit criterion curve. The only constraint is that regardless of the number of changes that are made, the sum of the scores must equal 1000. For example, if management wants to increase the benefit scores of one effort, it must reduce the value of another, or others, an equal amount.

The adjustment process might work like this. Management compares the program package D, H, and G on the cost-benefit criterion curve with B on the benefit-only criterion curve. Both packages cost about the same but the first has 1 1/2 times the benefit score value as the second. However, management may feel that B is more important than D, H, and G--regardless of what the data suggests (Table 3). So, B's benefit score is adjusted--let's say 250. The reason(s) for the change is documented and the scores of all the other efforts along the curve are adjusted (that is, normalized) so their sum equals 1000.

Next, management observes that package D, H, G, B, E, A and F on the cost-benefit criterion curve have a higher total benefit, for the same cost, than the package with B, A, and I on the benefit-only criterion curve. Since B and A are common to both packages, and there is no interdependencies among the research efforts, I can be compared with D, H, G, E and F. Let's assume management wants I's score changed to 190. The change is made, the data is re-normalized and the adjustment process continues until management is satisfied with the final benefit scores of all efforts. Final benefit-cost data are computed (Table 3), and a final set of curves are portrayed (Figure 2).

Figure 2.--Cost-benefit versus benefit-only criteria: final comparisons

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Figure 2 shows the optimal order of investment for a dissimilar mix of efforts. Note in Figure 2 that for any arbitrary limit on cost, the best mix is defined. For example, if the budget is 150,000, then the best investment strategy is D, H, B, G, E, A and I.

Limitations of the Design

The design for decisions approximates the value of the items being considered--as perceived by panel members.

Results depend on the approximations used to define and specify the design.

Those approximations dealt with the state of knowledge regarding interdependencies, costs, benefits, uncertainties, and risks of the research efforts.

Approximations are innate to complex problems and should be refined as better information becomes available.

Results reflect only the knowledge and judgment of the panel participants.

The system will be unfamiliar to most participants. Considerable effort must go into explaining the system and interpreting results. However, when it is understood it is usually accepted by managers and panelists and should have applications to a wide range of decision making.

Advantages of the Design

Participants apply judgments to a set of well-defined, content-specific situations.

The procedure incorporates anticipated accomplishments, but whenever this information is incomplete or unavailable the panelists should use their judgment in keeping with their background and experience.

The rationale supporting subjective judgments is elicited and captured. Thus, the approach recognizes that human judgment is indispensable to the problem solution.

The approach accomodates selective comparisons and trade-offs of dissimilar items. When comparing different items, panelists must evaluate relative consequences of various mixes of programs, no matter how diverse they might be.

Comparison through rational, informed, subjective judgment is an indispensable part of all decisions. The psychology of human choice requires it, and the design for decisions provides a logical foundation for capturing it.

The cost-benefit criterion curve is cleanly linked to relative benefits with no issues hidden within the procedure.

The structure of decisions is visible and invites investigation, discovery, and constructive criticism. It facilitates challenge, sensitivity analysis, and improvement through debate.

Results can be used to guage impacts of budget constraints and modifications.

This procedure for making decisions under uncertainty can serve as the hub of an information system for research investment strategies. In turn, these strategies influence new technology for forest management activities in the year 2000 and beyond.

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Table 1.--Survey form and hypothetical entries or how one panelist compared all two-way pairs of 10 research efforts [1/]

Research Effort	A Land Allocation	B Evaluate Impacts	C Mining & Oil Areas	D Recreation Landscapes	E Small/low Value Timber	F Fire Behavior Control	G Insect Populations	H Nutrient Cycling	I Timber vs. Other Uses	J Markets for Wood
A. Land Allocation	X	1	1	1	0	1	1	0	1	0
B. Evaluate Impacts		X	1	1	0	1	1	0	0	0
C. Mining & Oil Areas			X	1	0	0	1	0	0	0
D. Recreation/ Landscapes				X	0	0	0	0	0	0
E. Small/low Value Timber					X	1	1	1	1	1
F. Fire Behavior/ Control						X	1	0	0	0
G. Insect Populations							X	0	0	0
H. Nutrient Cycling								X	1	0
I. Timber vs. Other Uses									X	0
J. Markets for Wood										X

1/ A "1" indicates the benefits of the column research effort was judged more favorable than the benefits of the row research effort. A "0" means just the opposite.

Table 2.--Hypothetical example of how benefit scores were calculated for 10 research efforts

Research Efforts	A Land Allocation	B Evaluate Impacts	C Mining & Oil Areas	D Recreation Landscapes	E Small/low Value Timber	F Fire Behavior Control	G Insect Populations	H Nutrient Cycling	I Timber vs. Other Uses	J Markets for Wood	
	Proportion of times column research effort was judged more favorable than row research effort										
A. Land Allocation	.00	.70 1/	.15	.10	.15	.15	.60	.00	.60	.10	
B. Evaluate Impacts	.30 2/	.00	.00	.00	.15	.30	.45	.25	.45	.25	
C. Mining & Oil Areas	.85	1.00	.00	.30	.60	.70	.60	.25	.60	.30	
D. Recreation/ Landscapes	.90	1.00	.70	.00	.85	.70	.75	.55	.75	.85	
E. Small/low Value Timber	.85	.85	.40	.15	.00	.55	.60	.40	.75	.60	
F. Fire Behavior/ Control	.85	.70	.30	.30	.45	.00	.75	.30	.60	.55	
G. Insect Populations	.40	.55	.40	.25	.40	.25	.00	.25	.55	.25	
H. Nutrient Cycling	1.00	.75	.75	.45	.60	.70	.75	.00	.75	.70	
I. Timber vs. Other Uses	.40	.55	.40	.25	.25	.40	.45	.25	.00	.25	
J. Markets for Wood	.90	.75	.70	.15	.40	.45	.75	.30	.75	.00	
Totals	6.45	6.85	3.80	1.95	3.85	4.20	5.70	2.55	5.80	3.95	45.0
Benefit Scores	143 3/	152	84	43	86	93	127	57	129	86	1000.0

Footnotes for Table 2

1/ Let's assume 10 panelists were used in this survey. We add the individual raw scores from the survey forms (for example, 1+1+0+1+1+0+1+1+1+0=7) and divide by the number of panelists (7/10 = .70).

2/ The value in a cell to the left of the diagonal dash line is: 1.00 minus the corresponding pair-wise comparison value to the right of the diagonal. For example, the .30 in the first column, row two, is the result of 1.00-.70; the .70 being located in the second column, row one.

3/ $\frac{6.45}{45.0} \times 1000 = 143$ Multiplying by a 1000 is a convenience to avoid the use of decimal points in the benefit scores.

Table 3.--Initial and final result, after fine tuning the benefit scores, of the 10 research efforts

Research Effort	Initial Results			Final Results	
	Discounted Cost (Thousands)	Initital Benefit Score	Initial Benefit/ Cost Ratio	Final Benefit Score	Final Benefit/Cost Ratio
B. Evaluate Impacts	16	152	9.50	216	13.50
A. Land Allocation	36	143	3.97	123	3.41
I. Timber vs. Other Uses	56	129	2.30	164	2.93
G. Insect Populations	9	127	14.11	110	12.22
F. Fire Behavior/ Control	30	93	3.10	80	2.67
E. Small/low Value Timber	20	86	4.30	74	3.70
J. Markets for Wood	35	86	2.46	74	2.11
C. Mining and Oil Areas	26	84	3.23	72	2.77
H. Nutrient Cycling	2	57	28.50	49	24.50
D. Recreation/ Landscapes	1	43	43.00	38	38.00
Totals	231	1000		1000	

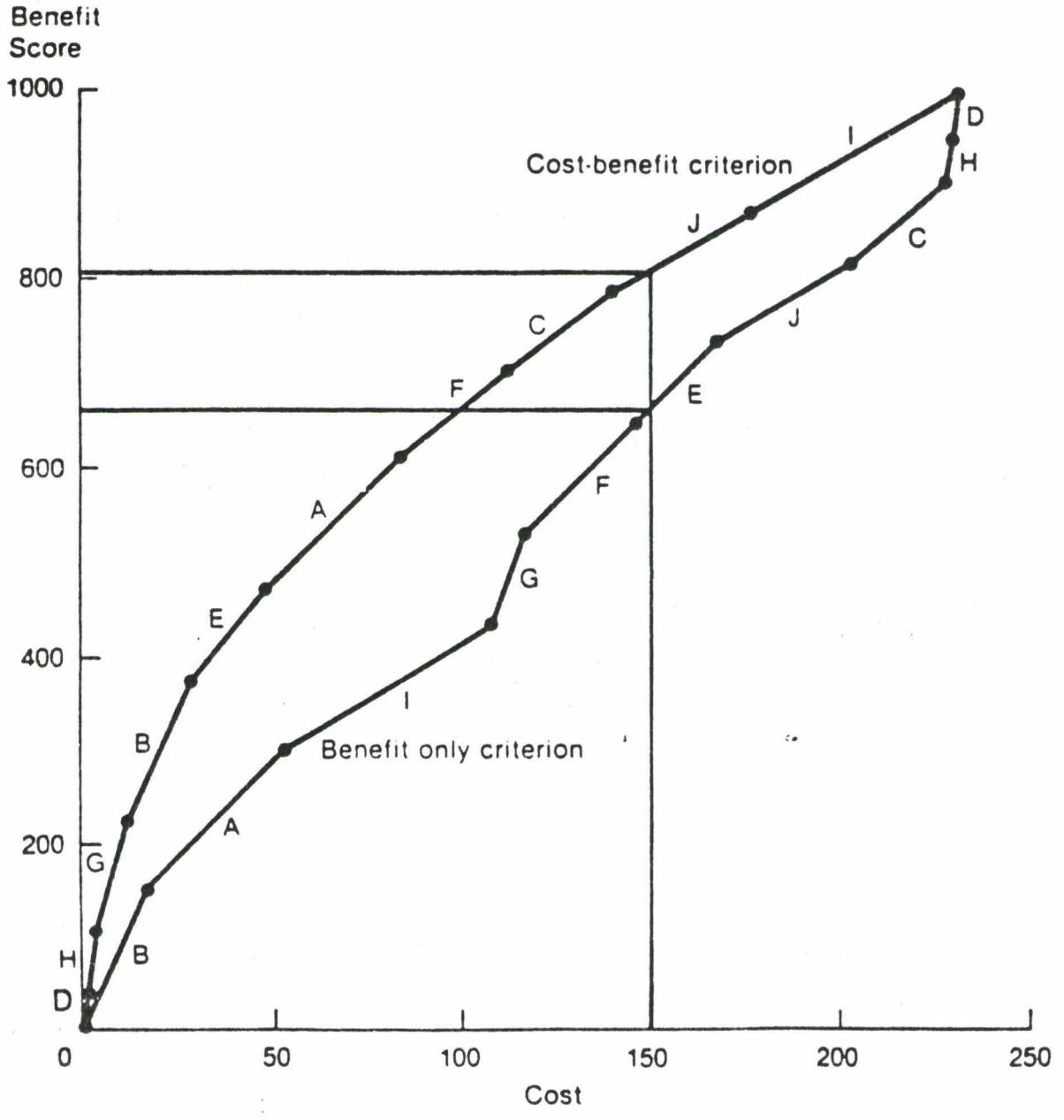
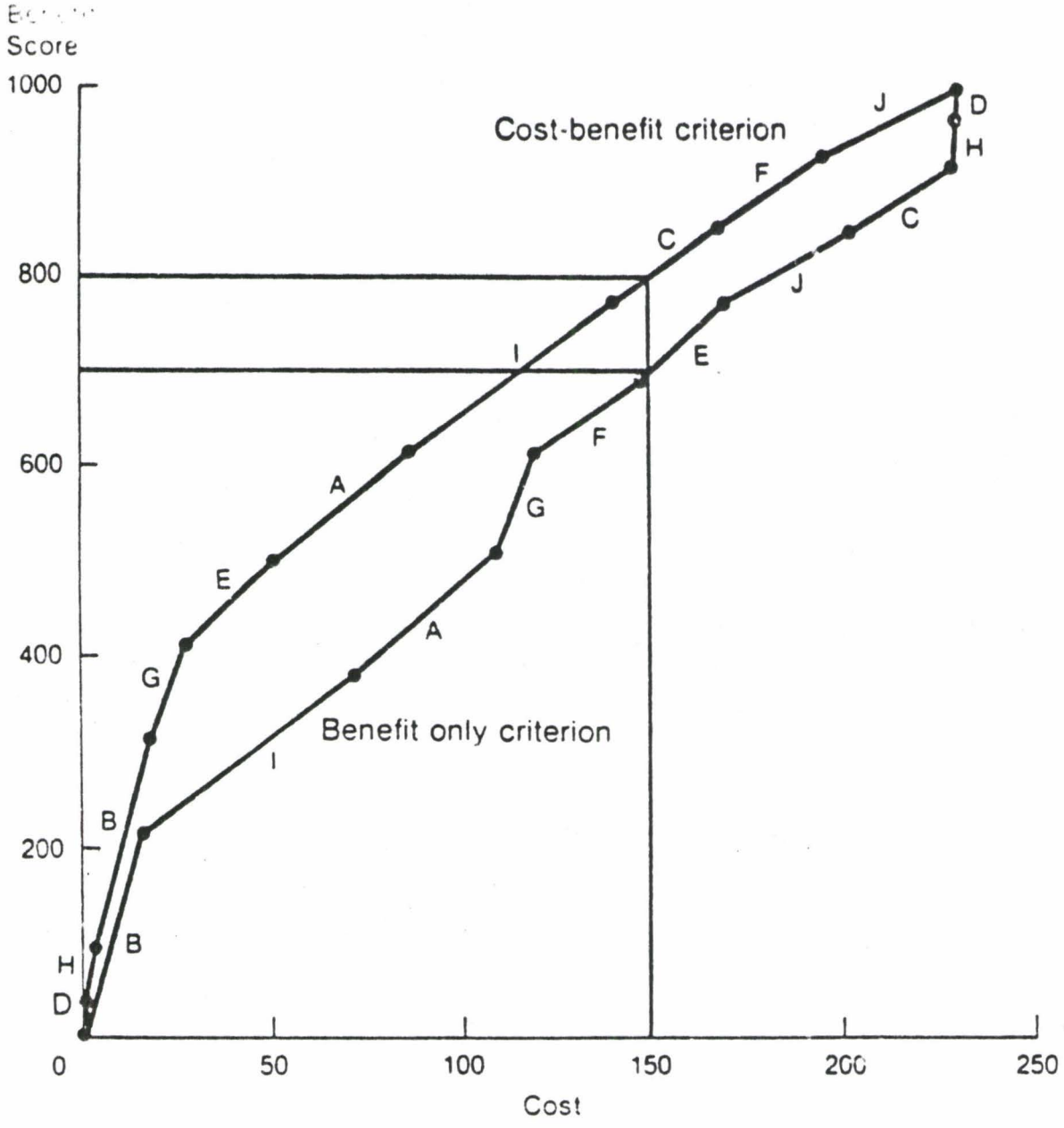

Benefit
Score
1000
800
600
400
200
0
50
100
150
200
250
Cost
Cost-benefit criterion
Benefit only criterion
A
B
C
D
E
F
G
H
I
J

Figure 1.--Cost-benefit versus benefit-only criteria: initial results


Score
1000
800
600
400
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Cost
Cost-benefit criterion
Benefit only criterion
A
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Figure 2.--Cost-benefit versus benefit-only criteria: final comparisons

APPENDIX D

Variety Class Criteria

	A DISTINCTIVE	B COMMON	C MINIMAL
LANDFORM	Peaks, domes, or ridgelines with distinctive form and/or color contrast. Distinctive hanging valleys, cirques, bedrock escarpments, drumlins, morrains, or U-shaped glacial valleys. Deep canyons, gorges, and valleys with vertical or near vertical walls and/or unusual configuration or color.	Peaks, ridges, or rounded hills which are not visually dominant, but surrounded by more similar landforms. Distinctly dissected topography. Consistently steep slopes greater than 45 percent. Subordinate canyons and drainages that lack distinctive configuration or color.	Expanses of indistinctly dissected landforms. Low hills, normally less than 300-400 feet of relief, with slopes 45 percent or less.
ROCK FORM	Large and/or unique talus slopes and avalanche chutes. Massive rock outcrops, cliffs, boulders, or groups of boulders.	Minor rock outcrops, cliffs, talus slopes, avalanche chutes, boulders or groups of boulders.	Geologic features usually unnoticed.
VEGETATION	Strongly contrasting natural vegetative patterns (e.g., color and textural). Windshaped, gnarled, or dwarfted specimen stands of vegetation which may create unusual forms or textures in comparison to surrounding vegetation. Open alpine growth characteristics. Outstanding marshes, meadows, and swamps. Areas with concentrations of wildflowers or uncommon, visually unique species. Western redcedar groves.	Vegetation is moderately varied with some natural openings and vegetative patterns. Minor marshes, meadows and swamps. Large expanses of grass bottomlands; i.e., Tobacco Valley/ Eureka area.	Areas of unvaried vegetation or with very limited variation in texture or color, with exception of grasslands.
WATER FORM	Glaciers and permanent or semi-permanent snowfields. High mountain lakes in the subalpine and higher elevation zones. Rivers, streams or reaches thereof that are dominated by one or more of the following flow characteristics: waterfalls, cascades, rapids, meanders, and/or pools. All other water forms with unusual or outstanding shoreline characteristics; e.g., large boulders, rock outcrops, cliffs, meandering shorelines, islands, or unique vegetation. Distinctive appearance beacuse of clarity and/or color. All hot springs. All other major springs.	All other lakes and reservoirs with common shoreline characteristics and series of ponds. Rivers, streams, or reaches thereof, that have some of the following flow characteristics: waterfalls, cascades, meanders and/or pools, and generally common shoreline characteristics.	All other isolated ponds. All other rivers, streams, or reaches thereof with very few outstanding characteristics. All intermittent streams.

APPENDIX E

United States Department of Agriculture | Forest Service | Kootenai NF | RR 3, Box 700 Libby, MT 59923

REPLY TO: 2380 Landscape Management

DATE: September 12, 1984

SUBJECT: Visual Quality Objectives

TO: District Timber Management Officers through District Rangers, Transportation Planners through Zone Engineers

There appears to be some uncertainty in the determination of visual quality objectives from the Integrated Forest Plan. The process is relatively straightforward as outlined on the attached sheet. Please route this to individuals in your shop who may benefit from an overview.

Questions may be directed to Gloria Gross, at extension 275.

GARY D. MORGAN
Lands, Minerals and Recreation Staff Officer

PROJECT LEVEL
VISUAL QUALITY OBJECTIVE DETERMINATION

All management allocations in the IFP have visual quality objectives. They are specified as a single VQO or as a range dependent upon visual significance. We are currently using the visual significance maps generated for the old Land Use Plan for initial VQO designation. However, since this information is for planning level work, it is necessary to do some refining at the project level. This is done by reviewing the project area on the ground from the key viewpoints.

Project level visual significance is dependent upon the Sensitivity Level of the viewpoint(s) and the viewing distance. The chart below defines the three categories of view distances and indicates the significance of each designation. (Sensitivity Level maps are on file at each district and zone. Copies are available from the landscape architect.)

View Distance:

fg = foreground (1/4 to 1/2 mile)
mg = midground (1/2 to 3-5 miles)
bg = background (mg to 10 miles)

The distances are defined as a range so that they can be adjusted to logical topographic breaks.

Viewing Significance:

High = fg1, fg2, mg1, [bg1]*
Moderate = bg1, mg2
Low = bg2, seldom seen

*In some cases, bg1 could have high significance. These cases are uncommon and dependent upon sensitivity and potential project impacts. An example would be a large powerline corridor, six miles away, seen from Libby.

Typically areas of high significance are assigned the VQO of partial retention, moderate significance yields a VQO of modification and low significance is managed under the VQO of maximum modification.

Management Allocations specify a range of visual quality objectives to allow for meeting other resource needs while striving for high visual quality on only those acres which are visually significant. Likewise, an M.A. with a single VQO (such as 16:Timber/Viewing, VQO of <u>modification</u>) needs to meet that VQO only on acres that are of high or moderate significance. These situations should be identified so that dollars and efforts are spent primarily on the most visually significant acres.

When the allocation calls for a single VQO of maximum modification, such as 15:Timber Optimization, it is the responsibility of the project plannner to make the line officer aware when portions of that allocation

are in areas of high visual significance. This does not mean that the VQO must change, but these tradeoffs need to be identified at the project evel.

.n summary, determination of visual quality objectives at the project level follows this procedure.

1. Review the current Management Allocations of the project area.

2. Locate any Sensitivity Level 1 and 2 travelways and use areas from which the project may be seen.

3. Look at the project on-the-ground from those viewpoints. Identify areas in the foreground and midground that are visible. (This can step can often be performed on the way to or from the project area.)

4. Compare the seen area to the IFP.
   a. Identify the VQO's for M.A.'s that specify a range dependent upon visual significance. (See chart above.)

   b. Verify M.A.'s with a single VQO. (I.e., Are there areas in 16/M or 17/PR that are not seen? Are there parts of 15/MM in the fg or mg?) Note these acres on the map.

5. The line officer decides on the adopted VQO's for the project based on the recommendations of the IDT.

The landscape architect can be contacted if complications arise or if a particularly difficult topography prevents accurate seen area mapping. The perspective plot program can be a benefit in determining seen area. The terrain data can be stored and later used for constructing a perspective plot of the proposed activities.

APPENDIX F

KOOTENAI NATIONAL FOREST LAND SYSTEMS INVENTORY
VISUAL AND RECREATION MANAGEMENT IMPLICATIONS

The Land Systems Inventory descriptions are of a detailed enough nature to allow for generalizations to be made regarding visual and recreation resources. Management problems or opportunities can be predicted based upon the presence or absence of particular physical characteristics.

Assumptions made about the viewing resource are based upon the unique combination of factors that describe a landtype. Those factors are the same ones commonly used to assess project level visual impacts of forest management activities such as timber harvesting and road construction. Visual recovery time is a key element in that assessment. Visual recovery time refers to the amount of time necessary for an altered landscape to return to a 'natural appearing' state and meet the prescribed visual quality objective.

The interrelationship of site characteristics that effect the visual resource are complex. The following chart divides those features into four groups. Within each grouping there are factors that indicate the relative degree of difficulty of integrating management activities into the landscape. That degree of difficulty is referred to as the visual absorption capability.

VISUAL ABSORPTION CAPABILITY

Feature	Visual Implications: High Absorption Capability	Visual Implications: Low Absorption Capability
LANDFORM		
Slope	Gentle	Steep - high visibilty, logging system/burning limitations
Slope Shape	Concave	Convex - closer road spacing
Relief	Rolling - landform screens	Dissected - large road cut and fill, location limitations
Elevation	Low	High - visible from many locations
Aspect	North - screening, faster growth	South - difficult growth conditions
Rock Outcrops	Few - flexibility in unit location, screening	Many - blasting for roads
VEGETATION		
Composition	Mixed species - textural diversity, seasonal interest, attractive: old growth grass/pine stands, hardwoods	Monoculture - prescription limitations, even texture, competition: difficult regen, heavy site prep
Regeneration	Fast - rapid recovery of harvest units, screening of roads	Slow - prolonged visual contrasts
Revegetation	Fast - rapid green-up, reduction of soil color contrast	Slow - prolonged visual contrasts
Density	Moderate - openings blend in but screening is still present	High - opening in canopy very obvious Low - no screening

SOILS		
Color	Dark - low contrast, disturbance less evident	Very Light - high contrast in forest setting
Stability	Stable - faster revegetation	Unstable - difficult to maintain vegetative cover, mass failure
Depth	Deep - fast regeneration/ revegetation	Shallow - activity location limited, ripping and blasting
Moisture	Moderate	Very wet/Very Dry - difficult growth conditions, logging system & site prep restriction
Gravel content		High - likelihood of borrow pits

APPENDIX G

SUMMARY OF VISUAL QUALITY OBJECTIVES IN THE INTEGRATED FOREST PLAN

Each management area on the Kootenai National Forest has a multiple use prescription which consists of goals, standards and guidelines, and management practices for that area. A summary of the visual quality objectives for each management allocation follows. Complete descriptions of the prescriptions for the management area are in Chapter Three of the Proposed Forest Plan.

MANAGEMENT AREA		VISUAL QUALITY OBJECTIVE
2	Semi-primitive Non-motorized Recreation	Retention (R)
3	Semi-primitive Motorized Recreation	Partial Retention to Maximum Modification
5	Viewing	R
6	Developed Recreation	PR in the foreground
7	Wilderness	Preservation (P)
8	Proposed Wilderness	P
9	Ten Lakes Wilderness Study Area	P
10	Big Game Winter Range	PR - MM
11	Big Game Winter Range/ Timber	PR - MM
12	Big Game Summer Range/ Timber	PR - MM
13	Old Growth	PR - MM
14	Grizzly/ Timber	PR - MM
15	Timber	MM
16	Timber/ Viewing	Modification (min.)
17	Viewing/ Timber	PR (except unseen)
18	Minimum Use - Regeneration Problems	PR - MM
19	Minimum Use - Steep Slopes	PR - MM
20	Administrative Sites	Not applicable
21	Research Natural Areas	R
23	Corridors	PR - MM
24	Limited Use - Nonproductive	PR - MM
27	Land for Exchange	PR - MM
29	Primitive Recreation	R

APPENDIX H

VISUAL REHABILITATION NOTES

The following notes resulted from a review of a two-stage small sale. The two-stage approach is a very worthwhile idea in visually sensitive areas. The first stage is performance of the required silvicultural prescription on the stands, shaping roughly to the desired configuration. The second stage is a small sale that provides for thinning and/or patch cutting to modify the edges of the units for the desired visual effects. This followup sale also allows for the salvage of overburn and blowdown.

Items to be aware of when prescribing treatment for the second stage:

1. Identify and prioritize specific areas that require visual rehabilitation.

2. Familiarize yourself with the specific stand characteristics, such as size classes, percent crown closure, species composition, etc., as well as access and logging systems possible.

3. Develop a concept of the effect desired in terms of pattern, percent crown closure, and most desirable leave species by unit and zone around the perimeter of each unit needing treatment.

4. Refine the concepts by targeting specific size classes, spacings, logging methods and slash disposal. Define the perimeter of the work area. Detailed maps and aerial photos will aid the marking crew. Some pertinent items to bear in mind in this refinement stage:

   a. Deal with the third dimension. Tapering the edges vertically will increase the effectiveness of the feathering by removing large, screening trees, reducing blowdown potential, and making a more gradual transition from flat, open ground to the surrounding forest.

   b. Address treatment for unmerchantable material. Can it be accomplished with the sale? Will KV dollars be available to thin a dense understory or to remove undesirable species?

   c. If you are striving for an "open ground" appearance, remember understory will definitely reduce the effectiveness of a moderately spaced overstory removal, especially from distances of over ½ mile.

   d. Estimate how this treatment will affect future entries.

5. Marking is the first phase of actualization. The prescriptions as well as the concepts must be clearly conveyed. Marking crews are trained to optimize timber production. It is difficult for them to counter this training by leaving cull trees and marking for uneven spacing. Also, conscientious crews working with a visual prescription will demonstrate some conservatism in quantity. In certain, but less frequent, situations that tendency may be reversed.

To overcome these situations, it is important that the project landscape architect be present during at least one day of marking to:

a. Convey the philosophy/prescription in the field.

b. Assist in identifying the trees to be cut to fulfill those prescriptions.

c. Assure consistency within the crew.

d. Learn something about silviculture and marking, as well as learning the best ways of verbally and graphically conveying a desired prescription for easy interpretation and application in the field.

6. Review the result with other members of the planning team and the marking crew leaders. If it does not look like you though it would, find out why. If you did not take out enough, it is probably better. There is always the possibility of another sale (if there is enough merchantable left) or find a fund number and a willing thinning crew.

Remember there is a tendency to underestimate the amount of vegetative removal necessary to accomplish visual objectives. Observer distance has a lot to do with it. To get a feel for apparent size, find a visual success, ours or nature's that can be observed from about the same distance and has generally the same site characteristics. Then go look at it on the ground, taking particular note of size of openings and visually significant vegetation as well as size and spacing of the overstory and understory. Try to emulate those features in the current rehabilitation project.

GLORIA GROSS
Landscape Architect
12/7/81

INTERVENING STRIP MANAGEMENT

Frequently visual management of a previously harvested area is complicated by the existing location of cutting units. When it is necessary to enter the uncut zone between two units, i.e. the intervening strip, there is often brings this question. How can the visual quality objectives be met when there are so few options for mitigation? The following discussion will address some of the concerns and alternatives available for timber harvest in intervening strips. Generalization is difficult since each situation is unique.

-Overstory removal, heavy thinning, partial cut/patch cut mix, or shelterwood are usually better visually than clear cutting if silviculturally viable.

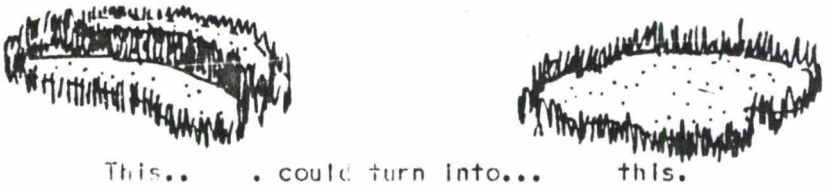
-Confining the new cut to the established boundaries of the existing cuts is not necessarily desirable.

Instead of this..... try this... or this.

-Obviously, tractor ground offers more options with marginal cost increases than does cable ground.

-The objectives in strip management should include improving the shape of the existing unit (if it does not meet the VQO's). New cuts should add vertical and textural diversity.

-The apparent size of the "before" and "after" cuts are an important consiceration. The intervening strip may be providing valuable screening.



This.. . could turn into... this.

-Other factors to consider are:

Observer Position

Looking down on an area is more revealing than looking up at it.

Reproduction/Revegetation Rates

This factor is interrelated with distance zone. Usually, in background and middleground, 10 to 15 feet would be considered visually significant. Foreground reveg can be smaller (6 - 10') and still be visually significant.

Other factors... (continued)

Slope

Slope, along with other topographic features, dramatically affects apparent shape and size. The steeper the slope the larger the appearance and the less screening available.

Rehabilitation

New cutting units, adjacent to the old, may increase the apparent size but can reduce the contrast of geometric lines. Larger size does not automatically equate to a lower visual quality objective achievable.

Relationship to Existing Features

The new activity should have a stronger relationship to existing natural features than to human caused features. Although in the short term it is easier to relate to the latter, the long term visual quality will be improved by focusing on natural features.

B. Gross
august 1982

APPENDIX I

HIGHWAY 2 LANDSCAPE MANAGEMENT: MONITORING PLAN

Photo points have been established to monitor the development of the Highway 2 Landscape Management Plan before, during and after the first entry. The Highway 2 Timber Sale will be sold by September of 1984. The harvest date will be dependent upon the purchaser but is expected to occur within a year.

The majority of photo points will be identified on the ground by permanant aluminum monuments inscribed with a number. The monuments will be located approximately 10' from the pavement edge. To avoid vandalism or accidental damage these markers will be installed flush with the ground and have no other attention-attracting feature. In the attached Photo Point Record, a detailed written description will facilitate location by referencing nearby, permanant site features. Copies of the Record will be in the landscape architecture project file and the district sale file.

It is recommended that photographs be taken from these points according to the following schedule:

1. Before sale activities commence, in spring or summer. (done)
2. During the logging operation (as pratical).
3. After the Forest has accepted the purchaser's work and slash clean-up is completed.
4. Within a year of completion, a set of winter photos and a set of summer photos.
5. Thereafter on a yearly basis to year five, then photos every two to three years until the next entry.

This schedule may be modified if there is a demonstratably more efficient method of recording the detailed changes in the landscape. This photo history will also serve as an analysis tool in the planning of other visually sensitive foreground modifications.

The photographs themselves will be labeled (viewpoint, unit and date) and stored in the landscape architecture files.

GLORIA GROSS
Landscape Architect
May 9, 1984
August 21, 1984 (updated)

PHOTO POINT RECORD

For simplicity in location description, in all cases the highway will be presumed to run in a true north/south direction. For example, facing the Idaho-Montana border, the right side of the road will be referred to as the east side.

Direction of view will be determined by location of the unit viewed in relationship to the photo point. Additional photo points may be added as necessary but should be recorded and identified on the ground in the same manner as defined in the monitoring plan.

A spot of yellow spray paint at the base of most location reference features will confirm identification. The phone boxes are not painted but can be readily identified by their individual number.

POINT	UNIT VIEWED	LOCATION / [SIDE OF ROAD]
1 *	2E	Reflector post (unpainted) 150' north of property line. [W]
2 *	2W	Reflector post (unpainted) 150' north of propecty line. [E]
3 *	2W	Reflector post in front of wooden 360 r.o.w. post. [E]
4	3	Ten feet off pavement, north edge of first dirt road south of Unit 3. Phone box 100/292. [E]
5 *	5	At "JCT 508" sign. [E]
6	4	North of dirt road adjacent to Unit 5, across from green Yaak River Rd. sign. [W]
7	25	In front of phone box 100/303. [E]
8 *	12	South of double dirt road, halfway between monument and pavement. [W]
9 *	13	In front of monument inside south corner of island across from and south of phone shed, level with pavement. [E]
10	15	At phone box 100/331. [E]
11	14	Center of dirt road across from phone box 100/429. [W]

* indicates that a monument has been set.

May 9, 1984
July 25, 1984 (modified)

APPENDIX J

FOREST SERVICE HANDBOOK
MILWAUKEE, WISCONSIN

July 1984

FSH 2309.22 - LANDSCAPE MANAGEMENT HANDBOOK, R-9

Amendment No. 1

POSTING NOTICE. Amendments to this title are numbered consecutively. Check the last transmittal received for this title to see that the above amendment number is in sequence. If not, order intervening amendments at once on form 1100-6. Do not post this amendment until the missing one(s) is received and posted. After posting retain this transmittal until the next amendment to this title is received. Place it at the front of the title.

Page Code	Number of Sheets Superseded	New
00	1	1
810.1--1 thru 810.1--20	-	10

Digest: Section 810 - Measurements of Accomplishment

Provides Landscape Management Quality Standards for use in Forest Plan implementation, monitoring and evaluation, review of standards and guidelines, and future updates of the Forest Plan.

LARRY HENSON
Regional Forester

LANDSCAPE MANAGEMENT HANDBOOK

TABLE OF CONTENTS

LANDSCAPE MANAGEMENT HANDBOOK

810 MEASUREMENTS OF ACCOMPLISHMENT - Measurements of accomplishment related to landscape management are achieved by evaluating quality standards for an organizational unit. The target organizational unit is the National Forest. The key concept under consideration is quality.

810.1 QUALITY STANDARDS. Quality standards reflect what "should" be. They are the criterion against which results are compared; the expressed measure of the level of achievement. Landscape management quality standards, defined by mission accomplishment, and major duty accomplishment are developed for eight (8) responsibility areas which have the potential to change the landscape. They are land management planning, minerals/energy management, range management, recreation facility development, road construction and maintenance, timber management, utility corridors, and wildlife habitat management.

1. Purposes.

a. Setting, obtaining, and measuring organization goals and objectives.
b. Serve as an auditing and control function, generating information upon which organization decisions and adjustments can be made.
c. Pinpoint strengths and weaknesses of organizational units.
d. Provide feedback to units on how the Regional Office views performance.
e. Serve as an information source for reward decisions, including merit increases, promotions, and other rewards.
f. Provide a means for ascertaining and diagnosing training and development needs for individual employees and entire units.
g. Provide information upon which work-scheduling plans, budgeting, and human resource planning can be based.

2. Requirements. Evaluations may be conducted by Regional or Forest personnel. The evaluation may be of overall unit performance with respect to landscape management or may be part of a broader activity evaluation (e.g., minerals/energy management activity reviews). Overall evaluation of unit performance in landscape management would normally be accomplished by:

a. Selecting from the eight responsibility areas those that best represent the range of management activities in which the unit is active.
b. Rating on a scale of 1 to 5 for each responsibility area selected:
(1) Part I - Mission accomplishment
(2) Part II - Major duty accomplishment
c. Providing narrative and photographic documentation explaining each rating.
d. Reviewing availability of reference material in Forest libraries compared to those listed in Part III - References.

3. Elements.

a. Part I, Mission Accomplishment. This represents on-the-ground observable conditions. The rating on Mission Accomplishment represents an overall impression substantiated by evidence of achieving the quality standards. Many statements describing the outstanding condition have been drawn from the Forest Service Manual and National Forest Landscape Management Volume 1 and Volume 2 chapters.

Outstanding examples of on-the-ground landscape management accomplishment will be documented by the Regional Office and shared with other organizational units.

b. Part II, Major Duty Accomplishment. Identifies and evaluates the presence of a process for institutionalizing landscape management into daily resource management activites; thereby providing the means for mission accomplishment. Accomplishment of major duties are of an accumulative nature. The processes depicted should be viewed not as a one-time accomplishment. Part II also identifies those activities that should be performed to ensure that all necessary information is developed and used effectively to achieve the planned result.

c. Part III, References. Statements on desired performance under Part II - Major Duty Accomplishment, are supported by references to direction and policy in the manual system and other sources.

LANDSCAPE MANAGEMENT QUALITY STANDARDS
PART I - MISSION ACCOMPLISHMENT

NATIONAL FOREST:_____ DATE:_____

MISSION STATEMENT: The desired condition is achieved when a natural appearing landscape exists and structures and facility improvements are visually subordinate to and in harmony with the characteristic landscape. The undesired condition is when landscape modifications are visually unrelated to the characteristic landscape.

RESPONSIBILITY AREA: LAND MANAGEMENT PLANNING

OUTSTANDING CONDITION:
- An individual skilled in landscape management is an involved member of the Forest interdisciplinary planning team.
- Landscape management considerations are integrated into the Forest planning effort.
- Landscape management is institutionalized into resource management activities.
- Forest maintains a standard and record of visual quality achievement.
- Visual resource values are a part of all resource analysis and management decisions.
- Each definitive land area of the Forest has a visual quality objective assigned as part of the management prescription.
- A system is present to monitor and evalutate change in the landscape over time.
- Visual quality objectives are fully integrated in the management of ROS class settings.

UNACCEPTABLE CONDITION:
- Design arts representative of Forest ID Team is not skilled or knowledgeable about landscape management.
- Landscape management is considered only as a reactive mitigation to resource management activities.
- No evidence of visual resource information in Forest Plan.
- Landscape management standards and guidelines, and records are missing.

RATING: (circle one) MISSION ACCOMPLISHMENT

UNACCEPTABLE	MINIMALLY ACCEPTABLE	ACCEPTABLE	EXCEEDS ACCEPTABLE	OUTSTANDING
1	2	3	4	5

RATING DISCUSSION:

LANDSCAPE MANAGEMENT QUALITY STANDARDS
PART II - MAJOR DUTY ACCOMPLISHMENT

NATIONAL FOREST:_____ DATE:_____

RESPONSIBILITY AREA: LAND MANAGEMENT PLANNING

MAJOR DUTIES: Instituitionalization of landscape management into the above responsibility area is adequate when there is a system present that continuously provides accomplishment of the following:

OUTSTANDING PERFORMANCE:

A. Entire Forest is inventoried and mapped for existing visual condition, variety class, sensitivity levels, initial visual quality levels, and visual absorption capacity. (Reference 1, 2, 4, 7, 14, 20, 22)
B. Alternative visual quality objectives, including desired character, are mapped and inventoried by variety class for each Forest Plan alternative. (Reference 1, 2, 4, 7, 14, 19, 20, 21, 22, 23)
C. The probable future visual condition is identified for each alternative. (Reference 6, 7, 14, 19, 20, 21, 22, 23)
D. Adopted visual quality objectives are mapped and inventoried by variety class to document the selected alternative. (Reference 1, 2, 4, 7, 14, 19, 20, 21, 22, 23)
E. The future visual condition is determined by appropriate time periods. (Reference 6, 7, 14, 19, 20, 21, 22, 23)
F. Characteristic landscape and desired condition statements are written for all land areas. (Reference 6, 7, 13, 18, 19, 21, 23)
G. Achievement of adopted visual quality objectives is monitored and evaluated and corrective action taken against deficiencies. (Reference 1, 2, 4, 7, 14)
H. Forest maintains a photographic library of achieved visual quality objectives for all management practices. (Reference 4, 7)
I. Appropriate visual display techniques are used to evaluate alternative management practices. (References 6, 7, 22, 23)

UNACCEPTABLE PERFORMANCE: Systems are absent that institutionalize landscape management into Forest resource management activities. Landscape management considerations are of a reaction/mitigation nature rather than an action/initiation nature, thereby limiting the efficiency of the landscape management program. Objectives for resource treatments do not include reference to the visual resource, where appropriate, or are poorly stated. Achievement of visual quality objectives is not monitored and documented in a quality manner. Systems are not present to correct landscape management deficiencies. Documentation of management decisions is not available. Lack of line and staff support is evidenced by limited understanding, poor communication, indifference, and absence of performance standards.

RATING: (circle one) MAJOR DUTY ACCOMPLISHMENT

UNACCEPTABLE	MINIMALLY ACCEPTABLE	ACCEPTABLE	EXCEEDS ACCEPTABLE	OUTSTANDING
1	2	3	4	5

RATING DISCUSSION:

NOTE: References underlined above are of primary value and should be understood.

LANDSCAPE MANAGEMENT QUALITY STANDARDS
PART I - MISSION ACCOMPLISHMENT

NATIONAL FOREST:_____ DATE:_____

MISSION STATEMENT: The desired performance is achieved when a natural appearing landscape exists and structures and facility improvements are visually subordinate to and in harmony with the characteristic landscape. The undesired performance is when landscape modifications are visually unrelated to the characteristic landscape.

RESPONSIBILITY AREA: MINERALS MANAGEMENT

OUTSTANDING CONDITION:
- Reclamation occurs sequentially with mining activity and results in the landscape being returned to a natural appearing condition which may include purposely designed new landforms, water features, and vegetative patterns.
- All earth disturbing phases of the mining process, from extraction to reclamation, occur sequentially.
- All disturbed landscapes are screened from critical viewing positions by landforms or vegetation.
- Mining activities are confined to the smallest area possible and are in scale with the surrounding landscape.
- Water quality of surrounding landscape is maintained to acceptable standards.
- Form, line, color, and texture of structures borrow from the existing characteristic landscape.
- Roads, utilities, and other necessary linear features demonstrate consideration for multiple use potential.
- Areas are revegetated as mining progresses.
- Air quality monitoring programs are operating and air pollutants, including dust, are curbed through management actions.
- Conflicts between various approaches to visual impact reduction have been resolved to the satisfaction of the approving officer.

UNACCEPTABLE CONDITION:
- Reclamation is postponed or not a part of the mining plan.
- Reclamation results in discordant landforms, vegetation patterns, or water bodies.
- Water and air pollution controls are not effective.
- Structures and necessary linear features are uncoordinated and dominate the characteristic landscape.
- Revegetation does not result in sustained growth of vegetation.
- Hazards are present that endanger public safety in surrounding area.

RATING: (circle one) MISSION ACCOMPLISHMENT

UNACCEPTABLE	MINIMALLY ACCEPTABLE	ACCEPTABLE	EXCEEDS ACCEPTABLE	OUTSTANDING
1	2	3	4	5

RATING DISCUSSION:

LANDSCAPE MANAGEMENT QUALITY STANDARDS
PART II - MAJOR DUTY ACCOMPLISHMENT

NATIONAL FOREST:_____ DATE:_____

RESPONSIBILITY AREA: MINERALS MANAGEMENT

MAJOR DUTIES: Institutionalization of landscape management into the above responsibility area is adequate when there is a system present that continuously provides accomplishment of the following:

OUTSTANDING PERFORMANCE:

A. A baseline environmental inventory of the area of potential impact is completed to facilitate formulating and evalutating mining and reclamation plans.
B. A mining operation/reclamation plan is approved clearly conveying information about the methods, equipment, and facilities to be used on a particular site.
C. A complete mining proposal package is approved including application or permits required by other applicable authorities.
D. State-of-the-art visual display techniques are used to determine potential visual impacts and to prescribe appropriate mitigation measures as part of the mining plan. (Reference 6, 23)
E. A visual absorption capacity (VAC) analysis is completed to determine the ability of the landscape to absorb or screen various mine facilities or operations. (Reference 4, 7)
F. Mining and reclamation activities are monitored and evaluated for conformance to the approved operating plan.
G. Mining permits contain provisions needed for landscape management in all phases of the mining activity.

UNACCEPTABLE PERFORMANCE: Systems are absent that institutionalize landscape management into Forest resource management activities. Landscape management considerations are of a reaction/mitigation nature rather than an action/initiation nature, thereby limiting the efficiency of the landscape management program. Objectives for resource treatments do not include reference to the visual resource, where appropriate, or are poorly stated. Achievement of visual quality objectives is not monitored and documented in a quality manner. Systems are not present to correct landscape management deficiencies. Documentation of management decisions is not available. Lack of line and staff support is evidenced by limited understanding, poor communication, indifference, and absence of performance standards.

RATING: (circle one) MAJOR DUTY ACCOMPLISHMENT

UNACCEPTABLE	MINIMALLY ACCEPTABLE	ACCEPTABLE	EXCEEDS ACCEPTABLE	OUTSTANDING
1	2	3	4	5

RATING DISCUSSION:

NOTE: References underlined above are of primary value and should be understood.

LANDSCAPE MANAGEMENT QUALITY STANDARDS
PART I - MISSION ACCOMPLISHMENT

NATIONAL FOREST:_____ DATE:_____

MISSION STATEMENT: The desired condition is achieved when a natural appearing landscape exists and structures and facility improvements are visually subordinate to and in harmony with the characteristic landscape. The undesired condition is when landscape modifications are visually unrelated to the characteristic landscape.

RESPONSIBILITY AREA: RANGE MANAGEMENT

OUTSTANDING CONDITION:
- Developed rangeland and water impoundments are of a size, shape, scale, and distribution that they appear as natural openings or are consistent with the characteristic landscape.
- Range reseeding is done concurrent with site preparation using seed compostion that will result in natural appearing plant communities.
- Undesirable range vegetation control will retain a natural and pleasing appearance.
- Form, line, color, and texture of structures, such as fences, corrals, and water developments, are subordinate to the characteristic landscape.
- Structures and improvements that are impractical to make subordinate to the characteristic landscape are designed to complement the landscape scene through pleasant contrast.
- Management practices such as salting, feeding, and herding are located so as not to create visual discord.
- Individual plant and broadcast burning are used where applicable; followed by rapid seeding of the site and reestablishment of grasses.

UNACCEPTABLE CONDITION:
- Size, shape, scale or distribution of created rangeland and water impoundments are visually unrelated to the characteristic landscape.
- Exotic or non-native species are introduced, or composition of species has been altered to appear not consistent with native or natural appearance.
- Undesirable range vegetation is controlled in a non-selective manner and dead plants dominate during the growing season in near views; major elements of plant communities are missing or unhealthy.
- Improvements or structures dominate the characteristic landscape; that is out of scale, or line, form, color or texture contrast.
- Poor installation and maintenance of improvements are evident.
- Range management practices result in areas with trampled vegetation, exposed soil, and trails that are evident to most observers, dominate the landscape scene, or give the area an unhealthy or "beat out" look, erosion and water pollution are evident.
- Range management practices result in congregation of livestock adjacent to developed recreation sites or other heavily used recreation areas.

RATING: (circle one) MISSION ACCOMPLISHMENT

UNACCEPTABLE	MINIMALLY ACCEPTABLE	ACCEPTABLE	EXCEEDS ACCEPTABLE	OUTSTANDING
1	2	3	4	5

RATING DISCUSSION:

LANDSCAPE MANAGEMENT QUALITY STANDARDS
PART II - MAJOR DUTY ACCOMPLISHMENT

NATIONAL FOREST:_____ DATE:_____

RESPONSIBILITY AREA: RANGE MANAGEMENT

MAJOR DUTIES: Institutionalization of landscape management into the above responsibility area is adequate when there is a system present that continuously provides accomplishment of the following.

OUTSTANDINNG PERFORMANCE:

A. Project plans reflect efforts to maintain and create appropriate landscape openings and cultural landscapes over time. (References 4, 7, 13, 16, 19)
B. Project plans account for visual rehabilitation and enhancement opportunities through inventory, and managed to adopt Visual Quality Objectives. (References 7, 14, 16)
C. Project plans insure rangelands are appropriate in apparent size through manipulation of edge, shape, scale, and distribution. (References 7, 13, 14, 16, 19, 20)
D. Selection of maintenance techniques and the construction of improvements and location of improvements are in accord with the characteristic landscape configuration. (References 13, 16, 19, 23)
E. Site preparation insures that resulting land configuration and debris are in harmony with the landscape. (References 13, 16, 18)
F. Reseeding practices are in keeping with the surrounding landscape. (References 16, 19)
G. Graphic depiction has been used to examine alternatives and project short and long-term visual changes. (References 6, 7, 16, 18, 19, 22, 23)
H. District field personnel have a working knowledge of landscape management principles involved with rangeland management, received through formal training. (References 4, 7, 13, 14, 16)

UNACCEPTABLE PERFORMANCE: Systems are absent that institutionalize landscape management into Forest resource management activities. Landscape management considerations are of a reaction/mitigation nature rather than an action/initiation nature, thereby limiting the efficiency of the landscape management program. Objectives for resource treatments do not include reference to the visual resource, where appropriate, or are poorly stated. Achievement of visual quality objectives is not monitored and documented in a quality manner. Systems are not present to correct landscape management deficiencies. Documentation of management decisions is not available. Lack of line and staff support is evidenced by limited understanding, poor communication, indifference, and absence of performance standards.

RATING: (circle one) MAJOR DUTY ACCOMPLISHMENT

UNACCEPTABLE	MINIMALLY ACCEPTABLE	ACCEPTABLE	EXCEEDS ACCEPTABLE	OUTSTANDING
1	2	3	4	5

RATING DISCUSSION:

NOTE: References underlined above are of primary value and should be understood.

LANDSCAPE MANAGEMENT QUALITY STANDARDS
PART I - MISSION ACCOMPLISHMENT

NATIONAL FOREST:_____ DATE:_____

MISSION STATEMENT: The desired condition is achieved when a natural appearing landscape exists and structures and facility improvements are visually subordinate to and in harmony with the characteristic landscape. The undesired condition is when landscape modificaitions are visually unrelated to the characteristic landscape.

RESPONSIBILITY AREA: RECREATION FACILITY DEVELOPMENT

OUTSTANDING CONDITION:
- Developed sites reflect barrier free site design considerations.
- Facility improvements are subordinate to the characteristic landscape.
- Line, form, color, and texture of structures and facility improvements borrow from the characteristic landscape.
- Facility improvements enhance the quality of recreation opportunities.
- Facility improvements provide for health, safety, and welfare of the visitors without detracting from the recreation experience.
- Structures and facility improvements that are impractical to make subordinate to the characteristic landscape are purposely designed to complement the landscape scene through pleasant contrast.
- Degree of landscape modification and facility installation is consistent with Recreation Opportunity Class and is consistent on site.
- Area exhibits well kept appearance and high level of craftsmanship.

UNACCEPTABLE CONDITION:
- Facility improvements or structures dominate characteristic landscape; that is, out of scale or line, form, color, or texture contrast.
- Degree of landscape modification and facility installation if unrelated to adopted Recreation Opportunity Class and not consistent on site.
- Area appears ill kept and run down.
- Safety hazards and access barriers are present.
- Major elements of plant community are missing or unhealthy.
- Poor installation and maintenance of facilities are evident.

RATING: (circle one) MISSION ACCOMPLISHMENT

UNACCEPTABLE	MINIMALLY ACCEPTABLE	ACCEPTABLE	EXCEEDS ACCEPTABLE	OUTSTANDING
1	2	3	4	5

RATING DISCUSSION:

LANDSCAPE MANAGEMENT QUALITY STANDARDS
PART II - MAJOR DUTY ACCOMPLISHMENT

NATIONAL FOREST:_____ DATE:_____

RESPONSIBILITY AREA: RECREATION FACILITY DEVELOPMENT

MAJOR DUTIES: Institutionalization of landscape management into the above responsibility area is adequate when there is a system present that continuously provides accomplishment of the following:

OUTSTANDING PERFORMANCE:

A. Appropriate line official approvals have been obtained for concept, preliminary and final plan packages. (Reference 3, 5, 8)
B. Level of development is consistent with Forest Plan and recreation opportunity class. (Reference 1, 2, 5, 8)
C. A concept plan package and environmental assessment have been approved prior to work beginning on preliminary plans. (Reference 3, 5, 8)
D. A thorough site analysis has been conducted and placement of facility improvements reflect an integration with the characteristic landscape. (Reference 3, 5, 8)
E. Preliminary plan and cost estimate have been field checked and recommended for approval by District Ranger, recreation staff officer, forest engineer, and landscape architect. (Reference 8)
F. The approved sign plan reflects concern for visual impact of signing; i.e., minimum signing and complementary shapes and colors. (Reference 3, 8, 11)
G. Structrues and facilities are appropriately selected, Regionally approved designs. (Reference 3, 8, 30, 31)
H. Site development plans reflect consideration for full participation of visitors regardless of presence or absence of disabilities. (Reference 3, 8, 30, 31)
I. Facility development reflects concern for information needs of visitors. (Reference 3, 8, 30, 31)

UNACCEPTABLE PERFORMANCE: Systems are absent that institutionalize landscape management into Forest resource management activities. Landscape management considerations are of a reaction/mitigation nature rather than an action/initiation nature, thereby limiting the efficiency of the landscape management program. Objectives for resource treatments do not include reference to the visual resource, where appropriate, or are poorly stated. Achievement of visual quality objectives is not monitored and documented in a quality manner. Systems are not present to correct landscape management deficiencies. Documentation of management decisions is not available. Lack of line and staff support is evidenced by limited understanding, poor communication, indifference, and absence of performance standards.

RATING: (circle one) MAJOR DUTY ACCOMPLISHMENT

UNACCEPTABLE	MINIMALLY ACCEPTABLE	ACCEPTABLE	EXCEEDS ACCEPTABLE	OUTSTANDING
1	2	3	4	5

RATING DISCUSSION:

NOTE: References underlined above are of primary value and should be understood.

LANDSCAPE MANAGEMENT QUALITY STANDARDS
PART - I MISSION ACCOMPLISHMENT

NATIONAL FOREST:_____ DATE:_____

MISSION STATEMENT: The desired condition is achieved when a natural appearing landscape exists and structures and facility improvements are visually subordinate to and in harmony with the characteristic landscape. The undesired condition is when landscape modifications are visually unrelated to the characteristic landscape.

RESPONSIBILITY AREA: ROAD CONSTRUCTION AND MAINTENANCE

OUTSTANDING CONDITION:
- Cuts and fills are kept to a minimum and revegetated as soon as possible.
- Form, color, and texture contrasts of landform modifications are kept to a minimum.
- Maximum amount of existing vegetation has been retained.
- Optimum conditions for desired vegetation and/or regeneration are provided.
- Vegetation modifications are appropriate to existing or desired character.
- Number of visible structures are kept to a minimum.
- Structures are visually subordinate to the characteristic landscape.
- Structures, such as bridges, that are impractical to make subordinate are purposely designed to complement the landscape scene through pleasant contrast.
- Conflicts between various approaches to visual impact reduction have been appropriately resolved.
- Horizontal and vertical alignments combine to create a pleasing or desirable visual experience in relation to the existing landform.

UNACCEPTABLE CONDITION:
- Cuts and fills are excessive and unvegetated.
- Road corridor lacks variety in alignment, vegetation type and edge, and spacing of openings or is unrelated to the characteristic landscape.
- Traveled way too wide for type and volume of traffic occuring.
- Surfacing excessive for type and volume of traffic occuring.
- Clearing width too wide and out of scale with surrounding landscape.
- Structures are out of scale or out of character with the surrounding landscape.
- Landform modifications dominate the characteristic landscape.

RATING: (circle one) MISSION ACCOMPLISHMENT

UNACCEPTABLE	MINIMALLY ACCEPTABLE	ACCEPTABLE	EXCEEDS	OUTSTANDING
1	2	3	4	5

RATING DISCUSSION:

LANDSCAPE MANAGEMENT QUALITY STANDARDS
PART II - MAJOR DUTY ACCOMPLISHMENT

NATIONAL FOREST:_____ DATE:_____

RESPONSIBILITY AREA: ROAD CONSTRUCTION AND MAINTENANCE

MAJOR DUTIES: Institutionalization of landscape management into the above responsibility area is adequate when there is a system present that continuously provides accomplishment of the following:

OUTSTANDING PERFORMANCE:

A. State-of-the-art methods of display are used prior to construction to illustrate to the decisionmaker proposed alignments, structrues, and potential visual impacts. (Reference 6, 12, 17, 19, 20, 23)
B. Engineering personnel involved with road layout, design, and maintenance have a working knowledge of landscape management principles. (Reference 4, 7, 11, 12, 13, 17, 24, 25, 26, 27, 28)
C. A landscape analysis is completed prior to road location decisions. (Reference 13, 14, 17, 19, 20, 24, 28)
D. Visual resource values are assessed in road location and design in addition to physiographic, traffic, and engineering considerations. (Reference 13, 14, 17, 19, 20, 24, 26, 28)
E. Vertical and horizontal alignment are designed to:
    1. Create pleasing landform character.
    2. Present a cross-section of the area's landscape character.
    3. Direct attention to positive visual features in the landscape.
    4. Capitalize on other opportunities that create a pleasant visual experience.
    (Reference 13, 14, 17, 19, 24, 25, 27, 28)
F. Recognize design criteria as a fundamental step in selection of road design standards. (Reference 12, 17, 24, 25, 26, 27, 28)
G. Road design criteria clearly reflect resource management objectives. (Reference 1, 2, 12, 17)

UNACCEPTABLE PERFORMANCE: Systems are absent that institutionalize landscape management into Forest resource management activities. Landscape management considerations are of a reaction/mitigation nature rather than an action/initiation nature, thereby limiting the efficiency of the landscape management program. Objectives for resource treatments do not include reference to the visual resource, where appropriate, or are poorly stated. Achievement of visual quality objectives is not monitored and documented in a quality manner. Systems are not present to correct landscape management deficiencies. Documentation of management decisions is not available. Lack of line and staff support is evidenced by limited understanding, poor communication, indifference, and absence of performance standards.

RATING: (circle one) MAJOR DUTY ACCOMPLISHMENT

UNACCEPTABLE	MINIMALLY ACCEPTABLE	ACCEPTABLE	EXCEEDS ACCEPTABLE	OUTSTANDING
1	2	3	4	5

RATING DISCUSSION:

NOTE: References underlined above are of primary value and should be understood.

LANDSCAPE MANAGEMENT QUALITY STANDARDS
PART I - MISSION ACCOMPLISHMENT

NATIONAL FOREST:_____ _____ DATE:_____

MISSION STATEMENT: The desired condition is achieved when a natural appearing landscape exists and structures and facility improvements are visually subordinate to and in harmony with the characteristic landscape. The undesired condition is when landscape modifications are visually unrelated to the characteristic landscape.

RESPONSIBILITY AREA: TIMBER MANAGEMENT

OUTSTANDING CONDITION:

- Created openings are of a size, scale, shape and distribution that they either appear as natural openings or are consistent with the characteristic landscape.
- All areas of major adverse visual impact are rehabilitated to an adopted visual quality objective.
- Stand prescription selected reinforces the management goal adopted for the area.
- Roads within harvest units are located to reduce their visual effect and to reduce landform alteration.
- Landings are located away from sensitive travel routes.
- Utilization and debris disposal are sufficient enough in foregrounds so that harvest activity is not visually evident.
- Stand prescription selected is compatible with existing characteristic landscape or desired character.
- Site preparation and reforestation efforts create complementary patterns in the characteristic landscape and reduce visual contrast.
- Stand prescription reflects consideration of: 1) Windfirmness of stand; 2) form, line, and color contrasts introduced by the physical requirements of the logging system, and 3) capability of achieving natural-appearing shape, edge effect, leave islands, and variety in size and dispersement.
- Debris disposal methods selected insure the short term character of the site is restored, and account for soil disturbance rehabilitation, observer location, and long term reduction of contrasting lines and residue debris configuration.

UNACCEPTABLE CONDITION:

- Size, shape, scale, or distribution of created openings are visually unrelated to the characteristic landscape.
- Harvest activities visually dominate the characteristic landscape.
- Line, form, color, and texture contrasts are very evident.
- Exotic or non-native species are introduced.
- Roads are excessive and visually dominant.
- Insufficient debris disposal gives public the impression of a lack of utilization.
- Composition of species is altered and appears inconsistent with native forest types.
- Stand prescription selected creates dominate change in the characteristic landscape.

RATING: (circle one) MISSION ACCOMPLISHMENT

UNACCEPTABLE	MINIMALLY ACCEPTABLE	ACCEPTABLE	EXCEEDS ACCEPTABLE	OUTSTANDING
1	2	3	4	5

RATING DISCUSSION:

LANDSCAPE MANAGEMENT QUALITY STANDARDS
PART II - MAJOR DUTY ACCOMPLISHMENT

NATIONAL FOREST: _____ DATE: _____

RESPONSIBILITY AREA: TIMBER MANAGEMENT

MAJOR DUTIES: Institutionalization of landscape management into the above responsibility area is adequate when there is a system present that continuously provides accomplishment of the following:

OUTSTANDING PERFORMANCE:

A. A corridor viewshed project plan, including desired condition description, is developed for all sensitivity level one and two travel routes, use areas, and water bodies. (Reference 7, 9, 18, 19, 20, 21)
B. State-of-the-art graphic techniques are used prior to harvesting activity in sensitive areas to display to the decision maker alternative harvesting patterns and the short- and long-term visual impacts. (Reference 6, 7, 18, 19, 23)
C. A desired condition description is included for all project plans. (Reference 7, 9, 18)
D. District field personnel have a working knowledge of landscape management principles involved with sale preparation and marking of timber. (Reference 4, 7, 9, 13, 18)
E. All visual rehabilitation needs and enhancement opportunities are inventoried and project plans developed to manage to an adopted visual quality objective. (Reference 7, 14, 18)
F. Project plans account for the long term management of stands over time and space. (Reference 7, 9, 18)
G. Project plans reflect efforts to reduce the apparent size of created openings through manipulation of edge, shape, and scale of harvest units and distribution of activities over time and space. (Reference 7, 14, 18)
H. Project plans reflect consideration of adopted visual quality objective, observer position, design diversity, mitigating negative elements, and enhancing positive elements. (Reference 7, 13, 18, 23)

UNACCEPTABLE PERFORMANCE: Systems are absent that institutionalize landscape management into forest resource management activities. Landscape management considerations are of a reaction/mitigation nature rather than an action/initiation nature, thereby limiting the efficiency of the landscape management program. Objectives for resource treatments do not include reference to the visual resource, where appropriate, or are poorly stated. Achievement of visual quality objectives is not monitored and documented in a quality manner. Systems are not present to correct landscape management deficiencies. Documentation of management decisions is not available. Lack of line and staff support is evidenced by limited understanding, poor communication, indifference, and absence of performance standards.

RATING: (circle one) MAJOR DUTY ACCOMPLISHMENT

UNACCEPTABLE	MINIMALLY ACCEPTABLE	ACCEPTABLE	EXCEEDS ACCEPTABLE	OUTSTANDING
1	2	3	4	5

RATING DISCUSSION:

NOTE: References underlined above are of primary value and should be understood.

LANDSCAPE MANAGEMENT QUALITY STANDARDS
PART I - MISSION ACCOMPLISHMENT

NATIONAL FOREST:_____ DATE:_____

MISSION STATEMENT: The desired condition is achieved when a natural appearing landscape exists and structures and facility improvements are visually subordinate to and in harmony with the characteristic landscape. The undesired condition is when landscape modifications are visually unrelated to the characteristic landscape.

RESPONSIBILITY AREA: UTILITY CORRIDORS

OUTSTANDING CONDITION:

- Setting and design of all utility installations reflect consideration of form, line, color, and texture contrast reduction.
- All facilities are designed and sited to make the best possible use of their particular sites.
- Right-of-way clearing and modifications of the natural setting are held to the minimum required for safe, efficient construction, operation, and maintenance.
- Structures are constructed that soften their visual impact and blend with their particular surroundings.
- Utility crossings at roads, trails, and streams are designed to reduce their visual impact, and blend with the natural setting.
- Utility support facilities are subordinate to the characteristic landscape.

UNACCEPTABLE CONDITION:

- Corridors and facilities are visually evident and dominate the landscape scene.
- Corridor locations are such that they conflict with established land and use patterns.
- Vegetative clearing and management result in contrasting pattern visually unrelated to the characteristic landscape.
- Utility operation results in environmental degradation.

RATING: (circle one) MISSION ACCOMPLISHMENT

UNACCEPTABLE	MINIMALLY ACCEPTABLE	ACCEPTABLE	EXCEEDS ACCEPTABLE	OUTSTANDING
1	2	3	4	5

RATING DISCUSSION:

LANDSCAPE MANAGEMENT QUALITY STANDARDS
PART II - MAJOR DUTY ACCOMPLISHMENT

NATIONAL FOREST: _____ DATE: _____

RESPONSIBILITY AREA: UTILITY CORRIDORS

MAJOR DUTIES: Institutionalization of landscape management into the above responsibility area is adequate when there is a system present that continuously provides accomplishment of the following:

OUTSTANDING PERFORMANCE:

A. A need analysis is conducted to determine the size and nature of demand, physical components needed, and points of origin and use. (Reference 15)
B. Route selection is determined by a documented corridor analysis, including environmental, socioeconomic, and engineering analysis. (Reference 1, 2, 15)
C. The engineering design and landscape design are accomplished together and address the following design considerations; visual impact, clearing of the right-of-way, utility crossings, structure design, color, and support facilities. (Reference 6, 15, 23)
D. The construction phase has been planned in detail and reflects consideration for the land base, construction equipment, and materials storage. (Reference 6, 15, 23)
E. Maintenance considerations for the facilities and right-of-way are incorporated into the planning, design, and construction phases. (Reference 15)
F. A rehabilition plan is prepared prior to construction to correct the effects of soil and vegetation manipulation. (Reference 15)

UNACCEPTABLE PERFORMANCE: Systems are absent that institutionalize landscape management into forest resource management activities. Landscape management considerations are of a reaction/mitigation nature rather than an action/initiation nature, thereby limiting the efficiency of the landscape management program. Objectives for resource treatments do not include reference to the visual resource, where appropriate, or are poorly stated. Achievement of visual quality objectives is not monitored and documented in a quality manner. Systems are not present to correct landscape management deficiencies. Documentation of management decisions is not available. Lack of line and staff support is evidenced by limited understanding, poor communication, indifference, and absence of performance standards.

RATING: (circle one) MAJOR DUTY ACCOMPLISHMENT

UNACCEPTABLE	MINIMALLY ACCEPTABLE	ACCEPTABLE	EXCEEDS ACCEPTABLE	OUTSTANDING
1	2	3	4	5

RATING DISCUSSION:

NOTE: References underlined above are of primary value and shoud be understood.

LANDSCAPE MANAGEMENT QUALITY STANDARDS
PART I - MISSION ACCOMPLISHMENT

NATIONAL FOREST:_____ DATE:_____

MISSION STATEMENT: The desired condition is achieved when a natural appearing landscape exists and structures and facility improvements are visually subordinate to and in harmony with the characteristic landscape. The undesired condition is when landscape modifications are visually unrelated to the characteristic landscape.

RESPONSIBILITY AREA: WILDLIFE HABITAT MANAGEMENT

OUTSTANDING CONDITION:
- Created openings and water bodies are of a size, scale, shape, and distribution that they are natural appearing or consistent with the characteristic landscape or desired condition.
- Form, line, color, and texture of structures are such that they are at least subordinate to the characteristic landscape and preferably not visually evident to the casual observer.
- Plant community age class distribution and composition is consistent with desired character.
- Site preparation insures resulting land configuration and debris are in harmony with the surrounding landscape. Prescribed fire is used where applicable.
- Reseeding practices are in keeping with the desired condition.
- Selection of maintenance techniques, construction of wildlife and fish habitat structures, and their location is in keeping with the characteristic landscape.

UNACCEPTABLE CONDITION:
- Wildlife habitat improvements are of such size, shape, scale, or distribution that they are unrelated to the characteristic landscape.
- Introduced exotic species are inconsistent with the characteristic landscape.

RATING: (circle one) MISSION ACCOMPLISHMENT

UNACCEPTABLE	MINIMALLY ACCEPTABLE	ACCEPTABLE	EXCEEDS ACCEPTABLE	OUTSTANDING
1	2	3	4	5

RATING DISCUSSION:

LANDSCAPE MANAGEMENT QUALITY STANDARDS
PART II - MAJOR DUTY ACCOMPLISHMENT

NATIONAL FOREST: _____ DATE: _____

RESPONSIBILITY AREA: WILDLIFE HABITAT MANAGEMENT

MAJOR DUTIES: Institutionalization of landscape management into the above responsibility area is adequate when there is a system present that continuously provides accomplishment of the following:

OUTSTANDING PERFORMANCE:

A. Project plans insure that habitat openings and habitat composition reflect desired condition descriptions. (Reference 7, 10, 18, 19, 20, 21)
B. Project plans insure wildlife openings and habitat compositions are appropriate in apparent size through manipulation of edge, shape, scale and distribution. (Reference 7, 10, 13, 14, 16, 19, 20)
C. Graphic depiction and/or computer modeling are used to examine alternatives and project long and short-term visual changes. (Reference 6, 7, 16, 18, 19, 22, 23)
D. Project plans reflect consideration of Adopted Visual Quality Objectives, observer position, design diversity, mitigating negative elements, and enhancing positive elements. (Reference 7, 10, 13, 18, 23)
E. Wildlife biologists and field personnel have a working knowledge of landscape management principals involved with wildlife and fisheries management received through formal training. (References 4, 7, 13, 14, 16)

UNACCEPTABLE PERFORMANCE: Systems are absent that institutionalize landscape management into Forest resource management activities. Landscape management considerations are of a reaction/mitigation nature rather than an action/initiation nature, thereby limiting the efficiency of the landscape management program. Objectives for resource treatments do not include reference to the visual resource, where appropriate, or are poorly stated. Achievement of visual quality objectives is not monitored and documented in a quality manner. Systems are not present to correct landscape management deficiencies. Documentation of management decisions is not available. Lack of line and staff support is evidenced by limited understanding, poor communication, indifference, and absence of performance standards.

RATING: (circle one) MAJOR DUTY ACCOMPLISHMENT

UNACCEPTABLE	MINIMALLY ACCEPTABLE	ACCEPTABLE	EXCEEDS ACCEPTABLE	OUTSTANDING
1	2	3	4	5

RATING DISCUSSION:

NOTE: References underlined above are of primary value and should be understood.

LANDSCAPE MANAGEMENT QUALITY STANDARDS
PART III - REFERENCES

DESIRED PERFORMANCE: Forest Supervisor's Office maintains a library of all the following publications systematically arranged. Ranger Districts maintain a library of references that are asterisked, also systematically arranged. Forest landscape architects have immediate access to all publications. A system is present to quickly provide publications to SO and District personnel upon request. Publications are referred to regularly.

UNDESIRED PERFORMANCE: Supervisor's Office and Ranger Districts do not have all publications respectively listed. Publications are not systematically arranged. Landscape architect does not have immediate access to all publications. SO and District personnel have difficulty obtaining publications when needed. Publications are not referred to during the daily course of business.

*1. 36 CFR, Subpart A - National Forest System Land and Resource Management Planning.

*2. Eastern Region Notebook on Land and Resource Management Planning.

*3. FSM 2330 - Developed Sites in Public Sector.

*4. FSM 2380 - Landscape Management.

*5. FSH 1909.12, Chapter 500 - Recreation Input to Land and Resource Management Planning.

*6. FSH 2309.17 - Landscape Management Visual Display Techniques Handbook.

*7. FSH 2309.22 - R-9 Landscape Management Handbook.

*8. FSH 2309.23 - R-9 Recreation Site Development Planning Handbook.

*9. FSH 2409.24 - R-9 Timber Sale Preparation Handbook.

*10. FSH 2609.11 - Wildlife Habitat Improvement Handbook.

*11. FSH 7109.11 - Sign Handbook.

*12. FSH 7709.11 - Transportation Engineering Handbook.

*13. National Forest Landscape Management, Volume 1.

LANDSCAPE MANAGEMENT QUALITY STANDARDS
PART III - REFERENCES

*14. NFLM, Volume 2, Chapter 1, The Visual Management System.

*15. NFLM, Volume 2, Chapter 2, Utilities.

*16. NFLM, Volume 2, Chapter 3, Range.

*17. NFLM, Volume 2, Chapter 4, Roads.

*18. NFLM, Volume 2, Chapter 5, Timber.

*19. "Forest Landscape Description and Inventories". Research Paper PSW-49.

20. "Measuring Landscape Esthetics: The Scenic Beauty Estimation Method". Research Paper RM-167.

21. "Assessing Amenity Resource Values". General Technical Report RM-68.

22. "VIEWIT: Computation of Seen Areas, Slope, and Aspect - For Land-Use Planning". General Technical Report PSW-11/1975.

23. "Perspective Plot". PSW R6-TM-031-1980.

24. Longfield, Robert F., Jr. The Vermont Backroad. Woodstock, VT: Northeast Environmental Design, 1974.

25. "I-70, in a Mountain Environment, Vail Pass, Colorado". Colorado Department of Highways. FHWA-TS-78-208.

26. "Scenic Road". Engineering Technical Report ETR-7700-2.

27. Noyes, John H. "Woodlands, Highways, and People". University of Massachusetts, Planning and Resource Development Series No. 9. Publication No. 33. 1969.

28. Highway Esthetics. Harvard University, Graduate School of Design. 1968.

29. Handbook of Landscape Architectural Construction. McLean, VA: American Society of Landscape Architects. 1974.

30. Barrier Free Site Design. Washington, D.C.: Government Printing Office. Stock No. 023-000-00291-4.

31. "Specifications for Making Buildings and Facilities Accessible to and Useable by Physically Handicapped People". New York: American National Standards Institute, Inc. ANSI A117.1-1980.

APPENDIX K

EUREKA FACE WILDLIFE HABITAT
IMPROVEMENT PROJECT

APPENDIX A

VISUAL MANAGEMENT CLASSES

Class 1 - This situation is the most critical. Not only does the area have a low capability to absorb visual changes but it also has a high visual quality objective. Manipulations may be able to occur and meet the VQO, but extensive mitigation must be taken. Results of management actions are predictable to a reasonable level of accuracy (60 to 75 percent), but are not assurable.

Mitigation may include but is not limited to protection of screen trees or other desirable features, irregular shaping, restricted unit size, no mechanical equipment, post burn treatment (feathering, tree removal or planting), restricted amount of manipulation at any one entry, longer time between entries, etc. All this will require extra funds for planning as well as force account crews. Assistance of a landscape architect is recommended.

Class 2 - The sensitivity and potentially negative response of these areas to change is high but not quite as difficult to manage as Class 1. Results of activities are predictable to an accuracy of 80 percent plus. Mitigation may include the same items as listed under VMC 1 but to a lesser intensity. A landscape architect may be helpful especially in foreground and midground situations due to the high visual sensitivity.

Class 3 - Sensitivity and visual response of this unit is moderate. Results of activities are greater than 90 percent predictable. Mitigation measures would be considered normal and site specific -- generated by the presence of special features. A landscape architect may be useful in foreground situations and in some cases where mechanical equipment is used. Unit size and distribution are not restrictive, but limits do exist.

Class 4 - Visual resource values are not particularly sensitive. Project implementation can be handled at the district level. Results are predictable and usually of minimal impact. Mitigative measures are few but that does not preclude following basic visual resource management principles.

EUREKA FACE WILDLIFE HABITAT
IMPROVEMENT PROJECT

APPENDIX B

UNIT SIZE AND DISTRIBUTION
BY VISUAL MANAGEMENT CLASS

VMC	Distribution[1]	Maximum Unit Size[2]
1	≤ 5%	25 A
2	≤ 20%	60 A
3	≤ 50%	100 A
4	≥ 30% - ≤ 75%	200 A

1/ Distribution - These figures are used in two ways. Of the total acres to be burned within proposed project area, the acres should be distributed such that these percentages are not exceeded. Also distribution percentages are applied to individual units (see footnote 2).

2/ A unit may fall within two or more VMC's, in such cases use the larger unit size in conjunction with the more restrictive percentages. Refer to the following examples:

a. A unit is desired in an area that falls within VMC 1 and VMC 2. The maximum size is 60 A (from VMC 2) but of that total unit size only 5 percent may be within VMC 1.

b. If a unit covers 3 classes, such as VMC 2, 3, and 4, the size may be 200 A but no more than 50 percent can be in VMC 3, and 20 percent in VMC 2. Therefore, the unit would be distributed so that 60 A would be the minimum in VMC 4, 100 A the maximum in VMC 3 and 50 A the maximum in VMC 2.

c. Similarly, if a unit covers VMC 1 and 3. The maximum size 100 A, but only 5 percent of that can occur in VMC 1.

* Note that a minimum of 30 percent of the total acres of the project should be in VMC 4. Also, where an individual unit extends from VMC 4 into other classes at least 30 percent should remain in VMC 4.